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THE WONDERS OF THE WORLD.

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Painted by G. H. Edwards. *Photo by Vittorio Sella.*

LAKE BUJUKU AND RUWENZORI.

[illegible] of the [illegible] Africa, is one beyond all comparison in its grandeur. In the hollow lies Lake Bujuku, a splendid [illegible] grotesque forests of senecio mingled with clumps of everlasting flowers. Towering far above it [illegible] west peak of Mount Stanley and Mount Baker of the Ruwenzori range.

THE WONDERS OF THE WORLD

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THE CRATER OF LA SOUFRIÈRE

A POPULAR AND AUTHENTIC ACCOUNT OF THE MARVELS OF NATURE AND OF MAN AS THEY EXIST TO-DAY

BY

EMINENT TRAVELLERS

INCLUDING

SIR HARRY JOHNSTON
G.C.M.G., K.C.B.

ALAN H. BURGOYNE
M.P., F.R.G.S.

PERCEVAL LANDON

J. THOMSON
F.R.G.S.

AND MANY OTHERS

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ILLUSTRATED

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CHAPTER XV.

By SIR HARRY JOHNSTON, G.C.M.G.

Luxor.—It has been already mentioned in this work that the modern name "Luxor" is a corruption of the Arabic words "Al-Uksur," or "the castles," applied to it, of course, by the ignorant Arab invaders and devastators of Egypt, because the great temple they saw there in its already ruined condition reminded them of the stone castles in their own country.

This Temple of Luxor had no doubt fallen into some degree of disrepair and ruin when the Arabs invaded Egypt in the seventh century, for the Christians of Egypt, though they frequently built their churches in the middle of these vast Egyptian temples, took no pains whatever to repair the ravages of time or earthquake shocks outside the actual structure of the mean little chapel in which they worshipped.

There was a temple standing at Luxor three thousand years ago, but the buildings whose impressive ruins are here illustrated were not erected until the reign of Amenhotep III. (between B.C. 1411 and 1375), during the period which is sometimes described as the zenith of Egyptian wealth and prosperity. The portion of the temple which survives to this day, its south end with the colonnaded forecourt and chambers leading to it, was dedicated by Amenhotep III. to the trinity of gods then worshipped in the Theban towns, namely, Amon-ra (the Sun-god), Mut the goddess, and Khonsu, the youthful god sometimes identified with the moon. Amenhotep III. seems to have

Copyright stereograph by] H. C. White Co.

THE FORECOURT OF AMENHOTEP III

Excepting those at the north end, these columns are still almost perfect; but the blocks which covered in the space between each double row have all disappeared. The centre of the court was paved and open to the sky.

desired specially to erect this temple in the heart of the riverside town as in some way a rival of the great Temple of Karnak, which stood farther away from the centre of the Theban capital A further motive was that of gratifying the priesthood and people of Thebes, because Amenhotep III., though the son of the preceding Pharaoh, Tehutimes IV., was not in the eyes of the orthodox a sufficiently legitimate King of the two Egypts, since he had not succeeded to the throne by being the husband or son of a Pharaoh's daughter, for the succession according to Egyptian law always went through the eldest daughter of a Pharaoh, which was why there were so many brother-and-sister, or half-brother and half-sister marriages. The wife of Amenhotep III. was, on the contrary, a foreigner, probably Assyrian, and the daughter of Yuaa, a priest of the god Min, and at the same time the keeper of the sacred cattle of Amon-ra, the Sun-god of Thebes. She was the celebrated Queen Teïe, or Thiy. Amenhotep had married her when he and she were very young, and he remained all his life devotedly attached to her and rendered her the utmost justice on his monuments, as has already been related in connection with the two Colossi of Memnon.

Copyright stereograph by] [*H. C. White Co.*

THE NORTHERN ENTRANCE TO THE TEMPLE OF LUXOR.

The colossal seated statues (one partially buried) are those of Ramses II., and through this entrance one passes to the great forecourt of the temple built in the reign of that monarch. On the stones of the pylons in front are depicted incidents in the war between the Egyptians and the Hittites

The son of Amenhotep—Akhenaton—was a great religious reformer who wished to substitute for the worship of the sun that of Aton* (the Greek name of which god was Adonis); but his successors restored the worship of the trinity headed by Amon-ra and continued the building of this temple according to the design left behind by Amenhotep III. The splendid building reached its climax of development under Ramses III., with a few small additions as late as Ramses VI., and the Pharaohs of the Twenty-first, Twenty-sixth, Twenty-ninth and Thirtieth Dynasties piously restored some of its beauty and completeness, for at one time it had been much damaged by floods of the Nile.

* Aton, seemingly, was the Syrian form of the Egyptian god Min, the patron of generation, increase, crops and vegetation. His worship was evidently growing up under the shadow of Amon-ra from the fact that the father of Queen Teïe was a priest at Thebes directing the worship of Min. It may have been due to the influence of Queen Teïe, who was known to be devoted to the god Aton or Min, that the religious revolution occurred under her husband's successor, Akhenaton, who was possibly her son.

Copyright stereograph by] [*H. C. White Co.*

THE GREAT COLONNADE OF HOREMHEB IN THE TEMPLE OF LUXOR

This is the most imposing part of the whole Temple. Fourteen columns in two rows supported the roof. This splendid colonnade was commenced by Amenhotep III., but was finished by Horemheb, the first Pharaoh of the XIXth Dynasty B.C. 1350.

Photo [illegible] *Thomas Cook & Sons.*

A STATUE OF RAMSES II.

This statue is the third of five equally colossal figures of Ramses the Great, placed in his forecourt of the Temple of Luxor. The figure stepping out from the dark recess is particularly impressive.

In the still standing forecourt of Amenhotep III. the columns are almost perfect, except those at the north end. In its perfect state this court was smoothly paved and open to the sky, but the colonnade cast on it more shadow than at the present day; and on the columns, architraves and walls, the inscriptions and reliefs were highly coloured.

At the south end of the forecourt still stands the Hypostyle Hall, the roof of which was once supported by eight rows of four columns. The first vestibule beyond the forecourt was used in later times as a Roman temple, the walls were covered with plaster, and elaborate pictures of men and horses were painted on this surface. On the west wall of this Hypostyle Hall may be seen a number of scenes illustrated in relief and giving a pictorial history of the divine origin of Amenhotep III. For one of his objects in building this splendid temple was to set forth the myth of his direct sonship to a god in order to atone to posterity for his complete lack of legitimacy. His mother, Queen Mutemua (a Syrian princess), is shown as the beloved of the god Amon-ra, the intermediary in bringing about an affection of these two having been no less a personage than the great goddess Isis. All this nonsense could be apparently repeated reign after reign, and century after century, in Egyptian monuments without arousing any recorded ridicule, and in other shapes and forms it has recurred in the history of European nations: for example, the preposterous frescoes of Rubens at the Louvre illustrating the life of Anne of Austria and the birth of Louis XIV.

Ramses II. (Ramses the Great) took a marked interest in this temple at Luxor. His architect, who was a high-priest of Amon, has left the record that he erected obelisks "whose beauty approached heaven;" that he planted gardens of trees in front of the great entrances and elevated flagstaffs of considerable altitude; and designed and constructed a broad and magnificent avenue of sphinxes which reached from the Temple of Luxor to the Temple of Amon-ra at Karnak, along which processions of priests passed on the occasions of great festivals. Moreover, this architect made, on behalf of Ramses, great double doors of electrum

(electrum, which is so often referred to in the history of these ancient Egyptian monuments, was an alloy of gold and silver, which was considered in its pale-yellow colour to resemble amber, of which the Greek name was "elektron"); and the walls of the temple were inlaid with electrum and the doors were studded with pure gold. Parts of the pavement (according to the Egyptologist, Breasted) were covered with sheets of silver. But some of the columns added by Ramses II. are huge and ungainly. He had caused a number of colossal statues of himself, seated and standing, to be placed in the temple. One of the surviving statues of this monarch in a standing position is, however, a very fine piece of Egyptian sculpture, though the legs are somewhat thick.

This Temple of Luxor might quite possibly by now have been laid in complete ruin by the steady rise in level of the Nile bed. We read in history that the temple was much damaged some two

Photo by] [*Capt. G. H. Abadie.*

A PORTION OF THE WALLS OF KANO

Kano is the principal commercial city in Northern Nigeria. Its walls are between thirty and fifty feet in height and are forty feet thick at the base. They are constructed of clay with an inner framework of tree-trunks. In front of the walls lies a deep double ditch or moat.

thousand years ago, and again, in later times, by the floods of the Nile. The same cause led in time to the complete ruin of Memphis, much lower down. The Nile water when long standing has a certain corroding effect on the bases of the columns which causes them in time to topple over. The Romans arrested this decay by the building of huge dykes, but these soon went to pieces under the ever-to-be-accursed rule of the Moslem between 640 and 1882 (though it is only just to say that the much-abused Khedive Ismail, and even his predecessors, did not discourage Europeans from attempting to save the monuments of Ancient Egypt). Since 1884, and after the British occupation of Egypt became effective, strenuous efforts have been made to save Luxor and other riverside temples from the effects of the floods. More than that, to a degree which few people realize who stay at home in England, the British, aided by French Egyptologists, have actually restored to something like their original condition some of the most superb buildings of the Pharaohs.

The Walls and Buildings of Kano in Northern Nigeria.—Now we turn to a very different style of African architecture, and yet one which probably owes its inception and characteristics to Egyptian influence penetrating the Sudan about two thousand years ago. I refer to the great clay buildings of Nigeria, and in this particular instance to the remarkable town of Kano, the commercial capital not only of Hausaland, but of all British Northern Nigeria. The district round Kano was one of the original seven states of the Hausa Confederacy. The Hausa language, and, to a certain extent, the Hausa people, seem to have come into existence through an ancient invasion, some say of Berbers from North Africa, but more probably of Hamites from Nubia. The Libyan and the Hamitic languages spoken respectively at the present day in North Africa, the Sahara, and in the coast region of the Red Sea, Southern Abyssinia, etc., are allied to each other in origin, and somewhat more distantly allied to Ancient Egyptian, and to the great Semitic family of languages of which Hebrew and Arabic are prominent representatives. All these languages agree (amongst other features) in the use of the letter "t" with a feminine signification, and the recognition of sex (masculine and feminine) in nouns, pronouns, etc. But it is not yet decided by philologists whether the Hausa language (which has a preponderating Negro basis) was created by the influence of Libyans from the north or Hamites from the east. If—as seems more probable—the latter, then it would coincide interestingly with the obvious Egyptian influence on the architecture of Nigeria. This influence did not extend to the use of stone, which has never been used as a building material by the True Negro or by the half-white Fulas of Nigeria: it rather confined itself to general design, the shape of doorways and the slanting walls of great buildings. But long afterwards, from about the tenth century of the present era onwards, another influence swept over the Central and the Nigerian Sudan, that of the Muhammadanized Berbers, or Libyans, of North Africa, which brought with it the ideas of Saracenic art and architecture, and this last influence may be seen in the designs and decorations of the doorway and interior of the Emir's Palace at Kano, a building which is now used as an office by a British official. The long spouts which project from the walls of some of these

Photo by] [*Capt. G. H. Abadie.*

THE GATEWAY INTO KANO.

The walls here are pierced with loopholes for musketry. The door within the gateway that leads into the town is of hard ox-hide and the heavy doorposts are of wood.

Photo by] [*Capt. G. H. Abadie.*

A GENERAL VIEW OF THE CITY OF KANO, IN NORTHERN NIGERIA.

Kano, the capital of Hausaland, having an area of about twenty-two square miles, is entirely enclosed between high walls. Houses only cover a portion of the enclosure; the rest is lake, hillock and arable land

buildings are intended to carry off the heavy rainfall. Egyptian influence caused these and similar works to be constructed with flat roofs, though here and there we see a feeble attempt at introducing the Saracenic dome. But flat roofs are not very well suited to a tropical African climate with its annual seasons of heavy rainfall, consequently these buildings are obliged to be provided with disfiguring water-spouts.

The city of Kano itself is built on an open plain and is surrounded by a wall which measures eleven miles round the rough circle. The wall is pierced by thirteen gates, and is from thirty to fifty feet high, and supplemented by deep double ditches. The gates are merely made of leather, ox-hides in several thicknesses, but they are set in massive entrance towers. The total area of the walls is about twenty-two square miles, but only one-third of this space is covered with houses,

Photo by] [*Capt. G. H. Abadie.*

A DISTANT VIEW OF THE EMIR'S PALACE AT KANO

This was the residence of the Fula Governor of Kano before the place was captured by a British force in 1903. It is built of clay on a framework of wood, and in the centre there is an imperfectly shaped dome covering a hall of audience.

the original design of the builders of Kano being to surround with high defensive works a sufficient area of ground to feed the besieged by cultivation, while this ground also includes on its surface one large pond, several (unsanitary) lakelets, and two steep hills.

The Audience Hall of the Emir's Palace, already referred to, is twenty-five feet square and eighteen feet high, and the designs on the wall are painted in black, white, green and golden-yellow. This yellow, indeed, glistens like gold, because the pigment is mixed with micaceous sand and therefore looks like metal. The dome-shaped roof is supported by twenty arches with a slightly horse-shoe outline.

There was a city of Kano existing, according to authentic Arab records, as early as the twelfth century of the present era, but in all probability the actual foundation of a great native market round about the hill of Dala goes back to that period in the history of the Sudan, about 900 A.D., when a great stimulus had been given to commerce by the immigration of traders from across the

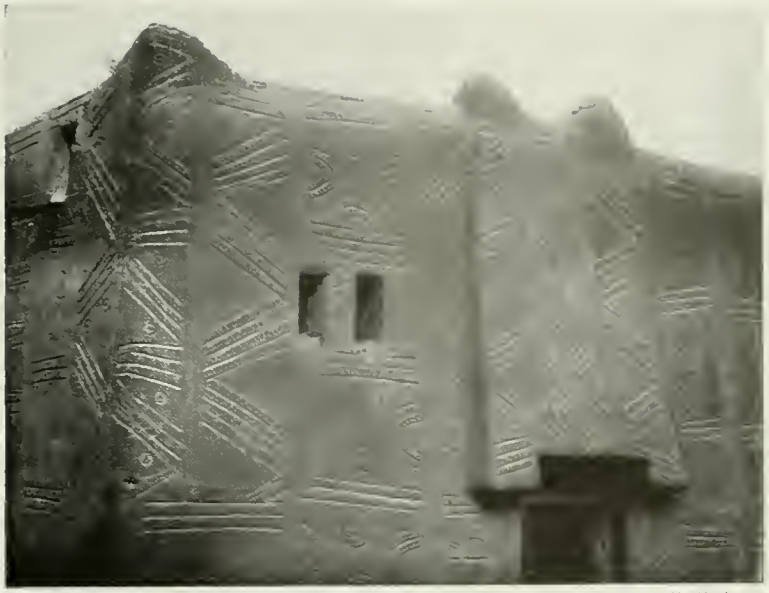

Photo by] [*Capt. G. H. Abadie.*

A part of the exterior of the women's quarters of the Emir's Palace, Kano
It is carefully ornamented by incised patterns on the clay surface.

Sahara and from Egypt. But the influence of Egypt on the architecture (not so much of Hausaland as of the Songhai and Fula peoples, originally of Western Nigeria) would date back to a still more remote period vaguely placed at about two thousand years ago, when the commercial impulses of Ptolemaic Egypt, infused latterly with Roman energy, carried some faint reflex of the arts and architecture of Egypt right across the Sudan into the region of the Upper Niger, where quite a remarkable civilization arose under the subsequent growth of the Mandingo and Songhai power. But this civilization did not halt much in what is now Hausaland. It took its great development to the west of the Central Niger and afterwards came back to Hausaland through the Fula conquest of the Central Sudan at the beginning of the nineteenth century.

The modern province of Kano, together with Katagum, includes an area of thirty-one thousand square miles, inhabited by about two million two hundred and fifty thousand of people. This population consists mainly of Hausa negroes, a few Songhais from the central Niger, an aristocracy of Fulas, Tuaregs from the desert, who are more or less nomadic and trade in leather goods, horses, camels and sheep; and lastly, Arabs who resort to the Central Sudan for trade, but more often to pick up a living as oculists, rough surgeons, and mallams, or learned men. Associated with the mallam type is the *Fiqih* (fakir), or professional saint. Indeed, it is not always easy to determine among these wandering Arabs from Egypt, the Sudan, Tripoli, or Algeria, where the saint begins and the doctor of medicine, schoolmaster, letter-writer and charm-writer leave off. The last profession unites them all, perhaps, in one individual: for Hausaland — and Kano city—are still so uneducated

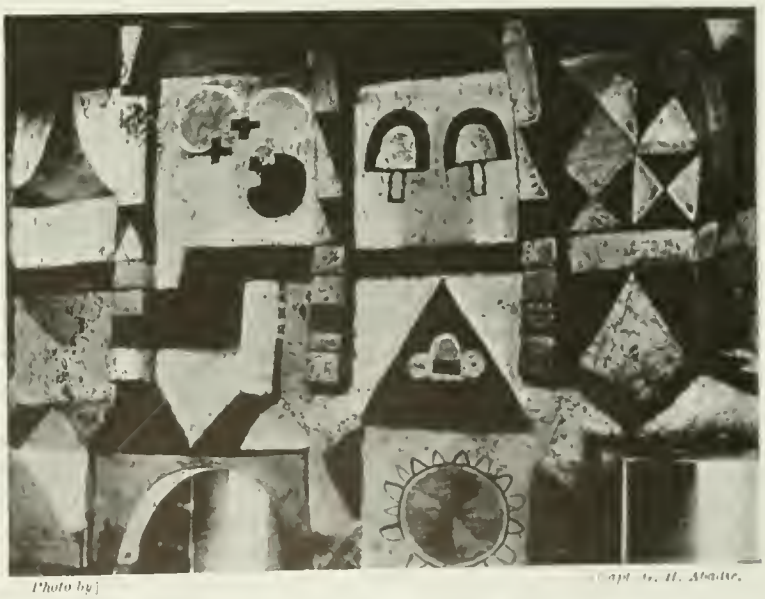

Photo by] [*Capt. G. H. Abadie.*

The decoration of the walls of the interior of the Emir's Palace, although very rude, are inspired by the Saracenic art of the North, and have a certain grandiose effect in connection with the monstrous structure of clay outside

and unsophisticated as to attach an immense superstitious importance to the written word and to the texts of the Koran. Many a cure is still sold in the market-place of Kano which consists of some sacred text written on a piece of parchment and sewn in a little leather bag to be worn round the neck, or even in a few sentences scrawled in charcoal on a whitened wooden board, which are washed off in water and swallowed, or applied as an outward lotion. But even as these lines are being written the iron rail and the puffing locomotive are awakening Kano to new life and to new ideas, and perhaps to a prosperity in commerce that her past history has never known. Nine hundred miles separate Kano from the port of Lagos on the Gulf of Guinea, and this nine hundred miles have just been traversed by a railway which brings Kano into direct touch with the sea, and will make it possible to transport the trade goods of Europe to the very heart of the Sudan at a rate half-again as cheap and infinitely more safe and certain than the traffic with camels across the Sahara Desert.

Photo by] [*Neurdrein Freres.*

THE ARCH OF TRAJAN, TIMGAD

The arch is situated to the north-east of the market of Timgad and stretches across the Decumanus Maximus. Built of sandstone in the Corinthian style, it is adorned with fluted columns of white limestone and smaller columns of coloured marble.

What will Northern Nigeria possess on her part to cause such a railway ultimately to pay its way? Tin, perhaps copper, a little silver, hides, beautifully-tanned goats' skins and sheep-skins, cotton, ground nuts, and possibly rubber. Above all, there will be the energy and industry of that remarkable Hausa people, which for a thousand years and more has created a trade in the Central Sudan and established a degree of civilization at one time the wonder of Arab writers, and the origin of that legendary wealth of these lands lying to the south of the Sahara Desert which first allured explorers like Mungo Park, Frederick Hornemann, Alexander Laing, and other pioneers in the service of the African Association to risk their lives in order to open up a legitimate commerce between Europe and the Sudan: a trade which might do away with the traffic in slaves. The completion of the railway from Lagos to Kano is the logical outcome of their efforts.

Timgad, Eastern Algeria.—The extraordinary Roman ruins of Timgad—the Thamugadi or Thamugas of the time of its foundation in the year 100 A.D., in the reign of Trajan—have already been referred to in this record of the world's wonders. A town was founded by a Roman legate, Lucius Munatius Gallus, at the date mentioned, but it became an uninhabited city during the seventh century, and seems to have been quitted by its more-or-less Roman inhabitants not at first from any attacks of Berbers or Arabs, but because of earthquakes which shook down some buildings. About this time—the beginning of the seventh century—the Berbers had made themselves independent of the weak Byzantine rule, and no doubt took every occasion of plundering the city that was offered by the temporary breaches in its walls, or panic caused by the earthquake

Photo by] [*Neurdein Freres.*

TIMGAD

A view of the principal street of Timgad, the ruined Roman city of Algeria. This street, the Decumanus Maximus, ran east and west through the city.

Photo by] [*Neurdrein Frères.*

TRIUMPHAL ARCH, TIMGAD.

This arch is situated at the eastern end of the Decumanus Maximus.

shocks. These same earthquake shocks may also have upset the water supply of the city (as they did elsewhere in North Africa), although the town received its water from a beautiful spring not more than two miles away. It was conveyed to Timgad by stone conduits, and an elaborate system of elevation raised the water to cisterns on the top of a tower, now in ruins. From this point the water was carried about the streets of the city in aqueducts, and probably the earthquake shocks having laid the water tower in ruins, it was this that interfered with the city's water supply and made it uninhabitable.

The ruins of Timgad extend over an area of one hundred and twenty acres. A great paved street, of which an illustration is here given, separates the town into two unequal parts. At the end of this street may be seen the Arch of Triumph, which is built of a beautiful bluish limestone coming from the neighbouring mountains. Amongst other buildings more or less intact is the Forum, containing a sort of town hall and commercial Exchange; the courts of justice, the tribune of public orators, and the Temple of Victory; and there are also statues erected in honour of emperors and important local personages of Timgad. There are the remains of a theatre, which could accommodate nearly four thousand spectators, the thermæ, or hot baths, and a colossal temple dedicated to Jupiter Capitolinus, besides many examples of houses, a few of which still retain their tiled roofs. Gradually this remarkable town is being revealed to our sight by the patient and skilful labours of French archæologists under the direction of Monsieur Albert Ballu. In many ways it is as remarkable as Pompeii, so far as it gives a detailed picture of civilized Roman life during the empire,

Timgad, of course, was for about three hundred years a Christian city, and it contains the remains of at least one church in the Byzantine style of architecture.

The Active Volcanoes in Equatorial Africa.—Some fifty-one years ago, when the great explorer Speke was travelling in search of the sources of the Nile and making a considerable *detour* to the west of the Victoria Nyanza, he sighted on the western horizon the cone of a volcano from which the smoke was issuing. This was the volcanic peak now identified as Muhavuru. Speke put a rough drawing of it into his book, but very little attention was paid to his statements about its being an active volcano, though these were based on stories collected from the natives, who called the district Umufumbiro (usually shortened to Mfumbiro, which means a kitchen or cook-house). The explorer Stanley, in 1876, passing (without knowing it) round the south end of Mount Ruwenzori in his discovery of the eastern gulf of Lake Edward, also caught a glimpse of this volcano. But it was not until Count von Götzen, a great German explorer and administrator, travelled through this region in 1894 that the Mfumbiro, or Virunga,* volcanoes were really revealed to the scientific world and placed definitely on the map. They have subsequently been explored by several British and German travellers, but it was not until 1907–8 that this remarkable district was completely and authoritatively examined by the scientific expedition of the Duke Adolf Friedrich of Mecklenburg. These volcanic mountains are probably of recent origin and the result of a remarkable local change in the earth's surface which threw up the land so as to block the Rift Valley that once connected Lake Tanganyika with the Albertine Nile; a condition of affairs which Livingstone felt instinctively must have existed at some time or another. At the present day, however, the little Lake Kivu, situated in this upraised Rift Valley, sends its waters to Tanganyika, and Tanganyika drains away intermittently—and almost reluctantly, one might think—to the barbarous Congo. The chain

* Virunga is the plural of Kirunga, a local name for a smoking mountain.

Photo by] [*New Photo Co.*

THE RUINS OF THE THEATRE, TIMGAD.

Besides the theatre, there are here shown part of the Forum and the Basilica, as well as the semi-circular auditorium of the theatre. Notice the excellent preservation of the auditorium, which could seat nearly 4,000 persons.

of volcanic mountains here illustrated consists of two groups surrounded by a vast field of lava, lava that is still hot in some places. The western group lies directly north of Lake Kivu, and includes two active volcanoes, Kirunga-cha-Gongo (eleven thousand one hundred and ninety-four feet) and Kirunga-Namlagira (nine thousand seven hundred and eleven feet), ten miles farther north. (In the illustration here given of Namlagira a column of smoke is seen rising from the summit.)

The surroundings of these eight (sometimes reckoned as seven) smoking volcanoes are not all black lava, old and new, or somewhat commonplace plantations of bananas and food crops. Where the ground has not recently been overflowed with volcanic eruptions there is forest of a magnificence

Photo by] [*Egon. H. Kirschstein.*

CAVES OF CONGEALED LAVA IN THE VOLCANIC DISTRICT OF MFUMBIRO.

"Mfumbiro" is the name given to the district between Lake Edward and Lake Kivu. Tremendous outpourings of lava over the Rift Valley have cooled and formed crevices and caves which serve the natives as dwellings.

scarcely paralleled elsewhere in Africa. On the high lands above seven thousand feet in altitude the forest consists of immense yews (*Podocarpus*), giant bamboos, and (among other trees) one of the Sapotaceous order, *Sideroxylon adolfi-frederici*. This is interesting, because it has a near relation in far-off Morocco, the Argan tree, on the slopes of the High Atlas. Lower down, the forest becomes more tropical; there are tree ferns and epiphytic orchids. But up to about nine thousand feet, in spite of the cold, great anthropoid apes range through all the types of forest, and particularly affect those containing the trees I have mentioned. These apes—a species or sub-species of gorilla and a large chimpanzi—feed on the tender young shoots of the bamboo.

According to Duke Adolf Friedrich of Mecklenburg (who has written an admirable account of this region), these apes live in "parishes," or families, and there is peace among them (relatively)

Photo by] *[Eyon, Fr. Kirschstein.*

THE VOLCANIC MOUNTAIN OF KIRUNGA-NAMLAGIRA

This mountain in German Equatorial Africa is 9,711 feet high, and is one of the seven great volcanoes of the Mfumbiro group

Photo by] *[Eyon. Fr. Kirschstein.*

THE SMOKING CRATER OF NAMLAGIRA.

At night columns of golden and blood-red vapour and red-hot ashes rising into the air, light up the district brilliantly for a considerable distance

Photo by] [*Egon. Fr. Kirschstein.*

THE INTERIOR OF THE CRATER OF KIRUNGA-CHA-GONGO (OR NINA-GONGO).

This crater has been named after Count Götzen, the explorer. The flat surface of the Götzen crater floor—flat except for the twin holes which Nature has neatly carved is very remarkable. It is generally too hot to walk upon, and may be seen smoking in certain places.

provided each family keeps to its own forest area or parish, but war if boundaries are crossed. Within the family—here my own observations are quoted from the not-far-off Toro forest—there is comparative peace. Yet getting-up-time and going-to-bed-time seem to be accompanied by much screaming and yelling, as though family relations were not always quite harmonious.

These volcanoes are quoted in some works (putting aside the almost numberless small cones as a separate computation) as seven in number. They are really eight: Namlagira and Nina-Gongo on the west; Mikeno, Visoke and Karisimbi in the centre; and Sabinyo, Mgalunga and Muhavuru in the east.

The eastern group contains higher peaks, some of which rise to acute and slender points. The highest of all, Karisimbi, has an altitude of fourteen thousand six hundred and eighty-three feet, and Mikeno, somewhat more to the west, is fourteen thousand three hundred and eighty-five feet. The most easterly of the peaks, Speke's mountain of Muhavuru, is thirteen thousand five hundred and sixty-two feet in altitude and is an isolated sugar-loaf-shaped mountain. The crater on the top is filled with water. Six miles to the north-west of Muhavuru is Sabinyo, eleven thousand eight hundred and eighty-one feet high, which was ascended and photographed in 1900 by Mr. J. E. S. Moore. The higher of these mountains have snow on the uppermost parts of the crater nearly all through the year. It is to the region immediately north of these great volcanoes—between them and the south end of Lake Edward—that the Uganda name of "cooking-pots" (Umufumbiro) really applies, as it is studded with hundreds of low cones and the craters of small extinct volcanoes.

An interesting picture is here given of the interior of the crater of Kirunga-cha-Gongo. This crater has been named after the recently-deceased Count von Götzen. The view of the crater of Kirunga-Namlagira shows the smoke arising from the boiling lava. Much of this region has been blasted and blighted by recent outpourings of lava, vegetation being completely absent from some stretches of the country. But in the older lava flows there are crevices which the natives utilize as caves. These people are of a somewhat wild Bantu stock, with an underlying race of Pygmies, and occasionally aristocratic looking chiefs that are of Northern, perhaps Egyptian or Gala, descent. In the north, all alike speak one of the purest and most archaic of Bantu languages, the Lukonjo; in the southern part of the volcanic region the principal tongue is Kinyaruanda, the language of the powerful Ruanda people. This is more nearly related to the speech of the Unyoro group of north-western Uganda.

A Flash of Lightning at Bopoto, Northern Congo.—Equatorial Africa is subjected generally twice a year—to the most terrible storms of lightning, thunder, wind and rain. The worst of these tornadoes (as they were named by the Portuguese) take place in the period which precedes the rainy season. The air is full of electricity then, after the fierce heat has dried the atmosphere and parched the ground. These tornado storms rarely, if ever, occur in the morning: it is generally in the afternoon about 4 p.m., or else in the middle of the night. Of the two, residents or travellers in Equatorial Africa would prefer to get them over in daylight, in case there should occur some small or large disaster, which seems always far more terrible when it takes place in pitchy darkness.

The writer of these remarks, who has experienced these thunderstorms on the Upper Congo, as well as in Uganda, Liberia and East Africa, once remarked that they offered one several ways of dying. Firstly, there was the hurricane wind, which might blow down your house or tent and stun or crush you in the *débris*. Secondly, came the lightning flash, which is bound to strike something, and if it be not the person of the anxious watcher it may be the thatch or poles of his house-roof, which

Photo by] [*Rev. William Forfeitt.*

A FLASH OF LIGHTNING ON THE NORTHERN CONGO

This photograph was taken at Bopoto on the northernmost bend of the Congo by the Rev. William Forfeitt, who was an intimate friend of the late George Grenfell.

then and there go up in flames. (Many are the European buildings—cathedrals, hospitals, barracks and schools which have been recently destroyed by lightning fires in Equatorial Africa!) If you escape these preliminary dangers, there is the avalanche of rain which follows—a cubic mile of water, it often seems. Out in this you are like to drown, for the atmosphere is as full of hissing water as of air; or the downpour may wash away your house, or penetrate the roof and swamp the interior. The severe chill which follows may mean death by fever or pneumonia.

These horrors naturally do not occur often, or there would be no European exploitation of Tropical Africa. But the apprehension of them always spoils the present writer's enjoyment of a fine display of lightning such as the Reverend William Forfeitt has here photographed. Bopoto, where this snapshot was taken a few years ago, is the Upoto of Stanley's celebrated journey down the Congo, one of the many places where he believed he was being attacked by cannibals. The boisterous people probably meant to have plundered the stranger from the unknown, but

Photo by] [*Robert Whitbread.*

THE TANKS OF ADEN FILLED WITH WATER.

In the far distance may be seen the town of Aden; but this is not the town ordinarily visited by steamer tourists, who generally get no farther than the modern town at Steamer Point.

would not have made much scruple about eating him and his lieutenant, Frank Pocock, and their black Swahili followers.

But for the last twenty years the Baptist Mission has had a large station at Bopoto, and the people are many of them Christians, and even educated craftsmen. Bopoto was frequently the headquarters of the late George Grenfell when he was engaged on those wonderful exploring or propagandist journeys which opened up (by accurate surveys) so much of the geography of Congoland.

The Tanks of Aden filled with Water.—It became the custom in the near East to attribute all marvels of construction, all great achievements in architecture not possessing an obvious parentage, to Alexander the Great, Joseph the Hebrew patriarch (once servant to Potiphar), or to King Solomon. These cisterns at Aden have, therefore, been attributed in their inception to Shelomoh ben David, king of the united twelve tribes of Israel. In reality, Solomon had nothing whatever to do with their construction. They were probably made first about 1000 B.C., when Aden had

Photo by] [*Neurdein Frères.*

INTERIOR OF THE MOSQUE OF SIDI-BU-MEDIN, NEAR TLEMCEN.

This beautiful mosque, dating from the thirteenth century, is, with other Saracenic buildings of equal richness of decoration, situated about two miles from the town of Tlemcen, in Western Algeria. Sidi-bu-Medin was a great saint in the Muhammadan world and is buried in the vicinity of this mosque

Photo by [*Neurdrein Frères.*

INTERIOR OF THE KUBA OR TOMB OF THE SAINT, SIDI-BU-MEDIN, NEAR TLEMCEN.

Through the doorway is the small chamber of the rather tawdry tomb of the saint, adorned with ostrich eggs and gorgeous silk draperies. To this tomb women who have no children come to pray and drink from the sacred well therein.

become a calling place for Arab and Egyptian vessels engaged in the trade between the Red Sea and Somaliland, Southern Arabia and Western India. In those days there was probably a more abundant rainfall on the high mountains behind Aden, and the people of Aden must have conceived the idea of cutting basins in the rock to receive and store the results of heavy showers in the hill regions above the scorched plain. Similar works on a larger scale existed formerly at Marib, in the Yaman.

The Aden tanks are in a hill gorge, just above the old Arab town. The tanks are taken charge of by British officials in order that the water may be fairly apportioned. Round about these reservoirs there is dense and beautiful tropical vegetation grateful to the eye of the traveller or the resident weary with the scorched, lifeless red rocks or black rocks round Aden, and to such the trees and plants probably appear more numerous and larger than they really are. Yet at the same time the lifeless nature of the landscapes near Aden has been much exaggerated. In the hill gorges not far from Steamer Point—within an easy walk—there is a vegetation of aloes, euphorbias, acacias, lilies, and fleshy-limbed shrubs, which "*n'est pas à dedaigner*" to a botanist; and within the scope of a short excursion are the grape vines, the figs, date-palms, and even frankincense trees (*Boswellia*) which so attracted ancient commerce to this part of Arabia Felix. Even now from the large Aden Protectorate and Sphere of Influence immense quantities of incense are shipped to the Muhammadan States of India, who also recruit a large proportion of their guards and soldiery among the warlike Arab tribes of the Hadhramaut.

The Mosque and Tomb of Sidi-bu-Medin, near Tlemcen.—At one time the city of Tlemcen in Western Algeria had a population of over one hundred thousand souls, when, from the fourteenth to the fifteenth century, it was the capital of the Abd-al-Wad Empire. These "Abd-al-Wad" were really Berbers of the Zeneta branch, and their kings were sometimes called the Beni-Zeyan, after the founder of the dynasty, Yaghmorassen-bin-Zeyan, a hero of the tribe of Abd-al-Wad. This worthy was chiefly occupied in fighting in order to establish peace and safety for his people in and round about Tlemcen, and he fought against the Berber dynasties of Tunis, of Spain, and of Morocco; but his successors were able to give themselves up to a very remarkable encouragement of the arts and industries, with the result that Tlemcen became another Granada or Tunis. The palaces, with

their art treasures, the mosques and their doorways and mahrabs, became famous, not only throughout the Muhammadan world, but through the descriptions of Leo the African, a convert to Christianity, who published in Italy a description of Africa in the sixteenth century.

I have already described the great mosque at Tlemcen, and now wish to draw the attention of my readers to the equally beautiful mosque of Sidi-bu-Medin. The exceedingly picturesque little village of Bu-Medin is situated not far from the railway station at Tlemcen, and is about two miles from the town of that name. It is reached by a road that slowly climbs the side of a verdant mountain. Picturesque villas of Moorish design are passed on the way, surrounded with lovely gardens of orange-trees, olives, cherries, pears, apples and plums. The village itself is properly called Al-Abad (spelt by the French, "Eubbad"). Through it percolates the clear water of a little brook that never dries and which nourishes most beautiful verdure all the year round. At the time of my visit all the open spaces of ground were blue with the beautiful large flowers of a dwarf iris. The mosque itself is really built in connection with the tomb of a great saint, Sidi-bu-Medin, much reverenced throughout many Muhammadan countries. Apparently he flourished in the fourteenth century, and is supposed to have had a particular pity and regard for childless women: so much so that his tomb at this village of Al-Abad is constantly resorted to by women who desire to have children, and who make their prayers to that effect at the tomb of the holy man, and at the same time drink water from the well by the side of the tomb, which is supposed to have a magic effect. Being women (despised of Islam), the poor things are not allowed to enter the actual chamber of the catafalque, but they utter their prayers through a little hole in the wall. By the side of Bu-Medin is buried one of his most fervent disciples, Abd-as-Salam-at-Tunin. The mosque, which rises close by the kuba, or domed tomb, on the opposite side of the way, is certainly one of the most beautiful existing developments of Saracenic art. It was apparently built in the fourteenth century. A stairway of eleven steps leads one to the great doorway. The door is made of cedar covered with plates of worked copper. All the other appurtenances of the door—hinges, knocker, rings, etc.—are also of copper and beautifully worked. On one side of this doorway rises a superb minaret covered with beautiful tiles. Passing through the doorway one enters a kind of cloister which leads to a court paved with tiles and with a fine marble basin for

Photo by [*Neurdrein Freres.*

THE MINBAR OR PULPIT OF THE MOSQUE OF SIDI-BU-MEDIN

The minbar is nearly always placed close to the mahrab or shrine of the faith. The mullah who officiates at the mosque, or any other saintly man who is invited to address the congregation, does so from the top of these steps.

ablutions. The interior of the mosque is divided into eight aisles by a series of arcades, and the walls are covered with exquisite sculptured stucco. This last is also the feature of the arch of the mahrab. The columns of this arch are of onyx. It is rightly asserted by the French architects who have made a particular study of buildings of Bu-Medin at Agadir, and in Tlemcen itself, that there is scarcely anything more beautiful to be found in the best remains of Moorish art in Spain.

Photo by] [*Neurdrein Frères.*

THE MAHRAB OR SHRINE OF THE MOSQUE OF SIDI-BU-MEDIN, NEAR TLEMCEN.

This Holy of Holies in the mosque indicates in what direction the Muhammadan is to turn his face to look towards Mecca, the sacred city. It is a beautiful example of sculptured stucco, ivory-white. Brass candlesticks flank either side.

The Snow Range of Ruwenzori.—In the very heart of Africa under the Equator there rises up nearly seventeen thousand feet into the air a wonderful mountain range, now known by the name of Ruwenzori. This block of mountains, about thirty miles long and fifteen miles wide, is of archæan rocks, and its elevation is probably due to some twist of the earth's crust, and not to volcanic causes, though, curiously enough, there are evidences of volcanic activity (in the shape of extinct craters, filled with beautiful little lakes, besides the existence of hot springs) on its eastern flanks, while at no great distance to the south—within sight, indeed, of the peaks of Ruwenzori—are the snow-crowned volcanoes of Mfumbiro. Ruwenzori separates the valley of the Semliki, which is part of the Rift Valley of Lake Albert Nyanza, from the regions draining into the Victoria Nyanza. Its southern flanks are bathed by Lake Edward (formerly called Albert Edward). Lake Dweru, which is connected by a narrow gut with Lake Edward, extends to the south-eastern slopes of the Ruwenzori range. It would almost seem at one time as though the Victoria Nyanza had risen till it was in sight of Ruwenzori and then discharged its waters into Lake Edward and the Albertine Rift Valley, before it pierced the hilly barrier on the north and developed its present outlet of the Victoria Nile. Thus Ruwenzori is situated between the two great fountains of the Nile, the Victoria and the Albert Nyanzas, and corresponds in position remarkably to the legendary Mountains of the Moon, which were placed at the head waters of the Nile by classical geographers. The coincidence between these legends and the actual facts of geography is so great that we are almost forced to conclude that the Greek and Roman geographers founded their descriptions of the twin lakes of the Nile sources and the great snow-covered Mountains of the Moon from information reaching them through Egyptian or Arab travellers who may have made their way in ancient times

Photo by] [*Vittorio Sella.*

A DISTANT VIEW OF RUWENZORI

Ruwenzori is extremely difficult to photograph, owing to the fact that only occasionally, and then but for brief periods, do the clouds disperse that hang over the snowy peak.

Photo by] [*Vittorio Sella.*

ANOTHER VIEW OF RUWENZORI

"Ruwenzori is no Kilimanjaro or Kenya, no single snow-mass. It is a chain of heights like the Caucasus. The snow peaks of this range probably extend over a distance of thirty miles from north to south."

through Galaland to Uganda, and thus have come to hear of, or even to see, these lakes and mountains.

During the Dark Ages—which, so far as the development of science is concerned, may be said to have begun about 200 A.D.—this idea of the Mountains of the Moon in Central Africa died away, but was revived by the Arab geographers when they began to study such writers as Claudius Ptolemæus and his maps. The Arabs adopted the title of "Mountains of the Moon" (*Jabl al Kumr*), and the European geographers of the Renaissance picked up the idea from the Arabs. When, in the middle of the nineteenth century, the two Würtemberg missionaries, Krapf and Rebmann, discovered the snow-crowned volcanoes of Kenya and Kilimanjaro, the Mountains of the Moon were thought to be located at last; and geographers were exasperated to find that they had nothing to do with the Nile flood. Curiously enough, when Speke discovered the Victoria Nyanza and Baker reached the shores of the Albert Nyanza, neither explorer caught sight of Ruwenzori. This is the more extraordinary in the case of Speke, because he was the first to sight the snow-crowned volcanoes of Mfumbiro, and must have been at one time sufficiently near to Ruwenzori to get a glimpse of its snows. Baker wrote of the Blue Mountains which lay to the south of the Albert Nyanza, but he may only have meant the high plateau wall on the south-west coast of that lake. Subsequently, Gessi Pasha, exploring the Albert Nyanza, heard native stories of white-crested mountains in the sky.

But it was Stanley—the late Sir Henry Morton Stanley—who discovered Ruwenzori, in 1888,*

* He had, perhaps, really discovered it in 1876, when he camped at its eastern base, guessed its altitude at 15,000 feet [illegible] clouds hid the snows, and [illegible] Mount Gordon Bennett.

and an attempt to scale the mountain was first made (in 1889) by one of his officers, Lieutenant Stairs. Stanley's pictures of this wonderful mountain range attracted much attention, but several years had to elapse before his exploration work could be followed up. The botanist, Scott Elliott, was sent out to Ruwenzori in 1893, to explore its flora, but was not able to ascend the mountain to a sufficient height to reach the alpine zone with its peculiar plants. Before that came Dr. Franz Stuhlmann, who gave an excellent description of the western side of Ruwenzori. Stuhlmann was followed by J. E. S. Moore (in 1900) and by the present writer, who was accompanied by a natural history collector, Doggett. Moore and Johnston succeeded in climbing Ruwenzori till they were well amongst the snow and ice and able to take photographs of the glaciers and to collect samples of the extraordinary alpine flora.

But the altitude of the highest summits of Ruwenzori remained undetermined. Stanley's original guess was nearest the truth, but the appearance of the mountain is so deceptive that the present writer and several other travellers argued that its extreme altitude could not be much under twenty thousand feet. Finally, there arrived on the scene, in 1906, H.R.H. The Duke of the Abbruzzi, with a splendidly equipped expedition, and each one of the six groups of snow-crowned peaks of Ruwenzori was scaled and measured, besides being photographed. We now know that the highest summit—Mount Margherita—is only sixteen thousand eight hundred and fifteen feet high. A very beautiful mountain in this range is Mount Edward, with its crater lake not far below. The strange plants growing by the edge of this lake are a gigantic species of groundsel (*Senecio*), closely allied to the *Senecio johnstoni* discovered by the present writer at similar altitudes on Mount Kilimanjaro.

The Temple of Dendera.—Dendera is situated on the west bank of the Nile in the northern part of Upper Egypt and close to where the Nile in its Koptos bend approaches nearest to the Red Sea. Dendera, in fact, is nearly opposite Kena or Keneh. It is one of the best preserved of the ancient edifices, and, being very accessible, is visited by large numbers of tourists. The modern name is derived from a late Egyptian word "Tantarer" (the Greek "Tentura"), but anciently it was called "Ant." Dendera was traditionally the scene of one of the numerous fights between the followers

From Stereograph copyright by [*Underwood & Underwood*

PORTICO OF THE TEMPLE OF HATHOR, DENDERA

The first temple at Dendera anciently called Ant was probably built in prehistoric times by the kings of Upper Egypt; but even parts of the present building are extremely old, dating back about 2,500 years

Photo by] [*Bonfils.*

BAS-RELIEFS ON THE BACK OF THE TEMPLE AT DENDERA.

Dating from the Ptolemaic period, these wonderful reliefs show the worship of Hathor by the famous Cleopatra and her son, Caesarion, whose father was the "dull, cold-blooded Caesar."

of the god Hor and the god Set, and when the dynastic Egyptians were well established in this part of the Nile Valley they dedicated their temple at Dendera to Hathor, the celebrated cow-goddess, "the cow which issues from the western hills." At Dendera she is celebrated as the beneficent goddess of maternal and family love, of light and of joy, her form being that of a woman on whose head rises the disc of the sun, fixed between a pair of cow's horns. But in earlier representations she is given the head of a cow, and, later on, a woman's head with a cow's ears.

A new temple, or a modification of the old one, was built at Dendera by Khufu, the Pharaoh of the Fourth Dynasty, who erected a great pyramid at Giza. A plan of the building drawn upon ox-hide is said to have been found by King Pepi of the Sixth Dynasty, who rebuilt the temple, which had fallen into ruins. The temple was again restored under the Eighteenth Dynasty by Tehutimes III., and in its present form is mainly the work of the Tenth Ptolemy (Soter II.). It also contains records of the great Cleopatra and of her son Cæsarion, the last of the Ptolemaic Pharaohs and reputed to be the son of Cæsar. Additions were still made to the temple under the Roman Emperors until the verge of the Christian period. Under the Romans, Hathor was changed into Venus or Aphrodite.

In the centre of the wonderful bas-reliefs on the outside of the temple is the remains of a large head of Hathor crowned with the sun rising between the cow's horns. To the right of this deeply-indented face is a damaged portrait of the famous Cleopatra, and beyond her, Cæsarion, whose father was Julius Cæsar. They are shown worshipping a number of Egyptian gods and goddesses. On the left-hand side of the central head of Hathor, Cleopatra appears again, and next to her the

Photo by] *[Interch.*

BAS-RELIEFS ON THE TEMPLE AT DENDERA

Showing a Ptolemaic Pharaoh being crowned by the goddesses Nekheb and Wazet, patronesses respectively of Upper and Lower Egypt, with the double crown of these dominions

hawk-headed god Horos Behudet, or Hor-sem-Teu (of Edfu). The columns of the great Hypostyle Hall of this temple are noteworthy objects. They are eighteen in number, and are shaped in the form of the totem of Hathor, which was a pole surmounted by a cow's head.

The Temple of Edfu in Upper Egypt.—Edfu is situated on the west bank of the Nile not quite midway between Thebes-Karnak on the north and Assouan far to the south. It is supposed to have been the site of a great battle in remote prehistoric times between the followers of the god Horos and those of the wicked god Set. The followers of Set seem to have been a race that occupied the Valley of the Nile anterior to the dynastic Egyptians: they may have been negroids or early Libyan settlers. But, like so many tribes of Central and South Africa at the present day, they had a particular reverence for the crocodile,* which in a way had become their totem or the sacred symbol of their tribe, and gradually grew into a god that was identified with darkness and monstrous wickedness. Set is identified with the tribe, or the deity governing the tribe, which killed the great man-god Osiris, probably the deification of some wonderful white man who entered the land of Egypt with new arts and industries and who perished under some reactionary attack of an aboriginal race. The followers of Horos were hawk-worshippers, that is to say, they adopted as their totem or emblem some bold-eyed species of hawk which could look fearlessly at the sun, for Horos-worship soon became a part of sun-worship and was identified with the "Sun on the Horizon." The followers of Set were certainly the predecessors of those who worshipped Har, or Horos, and may have been living in a condition of Palæolithic culture, using very primitive stone implements. As actual events grew into legends and myths, the Egyptians supposed that Horos was the brother of Set, though forced by circumstances to be his enemy and opponent, and at Edfu the followers of the hawk and the crocodile gave battle in some remote time,

Photo by [*Dittrich.*

THE GIANT COLUMNS AT DENDERA.

These mighty columns are shaped in the form of the totem of the goddess Hathor, *i.e.*, a cow's horns or head fixed on a pole. These columns are painted in brilliant colours.

* This cult extends far over negro Africa and reappears on the sculptured monoliths of Rhodesia (Zimbabue). The common symbol of Set was a monstrous animal like an ass seated on its haunches with its tail erect. Nevertheless, the creature regarded as most typical of Set was the crocodile.

Photo by] [*Bonfils.*

PYLON OF THE TEMPLE OF EDFU.

This pylon is over 110 feet in height, but has lost its cornice. The scenes represented in low-relief on its surface deal chiefly with Ptolemy XIII., who reigned between B.C. 80 and B.C. 51—twenty-nine years. He is here shown smiting his enemies in the presence of the gods and goddesses.

perhaps coincident with the rise of the first dynasty ruling over United Egypt, some seven thousand years ago. Under the Third Dynasty a temple was erected at Edfu in imitation of the architecture of Memphis and dedicated to the hawk, Har or Horos. In the course of time, especially after the expulsion of the Hyksos and the prosperous days of the Eighteenth and Nineteenth Dynasties, the goddess Hathor was brought on solemn visits from Dendera to Edfu and became associated with Horos as his consort. Then, it was theorized, a son must be the result of this union, and so at length in the times of the Ptolemies another of the many

Photo by] *[Photochrom Co. Ltd.*

THE ENTRANCE TO THE GREAT HYPOSTYLE HALL OF THE TEMPLE OF EDFU, UPPER EGYPT.

The roof of this hall, allowing for an opening for light in the centre, is intact, and is supported by eighteen columns of variously formed capitals. Until recently this temple was entirely buried in rubbish, which accounts for its good state of preservation.

trinities of Egypt was founded at Edfu, including Horos, Hathor, and their son Hor-sem-Teu, or Hor-sma-Tawi, = "Horos, Uniter of the Two Lands."

Thousands of years ago, at the commencement of the dynastic period, when Upper and Lower Egypt were united under one king of the dynastic race, Edfu was already a wealthy place and with a well-developed civilization. It not only possessed the germ of a municipality, but a civic official corresponding to a mayor, and a judge who is styled "Recorder" in the English translations of the local inscriptions. Already at this remote time in the history of Egypt—some seven thousand years ago—gold was much prized, and Edfu for some reason became a "gold city," receiving and storing gold from Nubia. Consequently its tribute or tax to the reigning Pharaoh was computed in so much weight of gold, as well as in oxen.

But about its temples hung an evil renown of human sacrifice which lasted right down into Roman times. For something like five thousand years victims representing the defeated god Set were sacrificed on the altar of the victorious Hawk-god Horos.

The Premier Diamond Mine of the Transvaal.—Reference has already been made to the discovery of diamonds in South Africa and to the stupendous works for their extraction erected at Kimberley (the De Beers Mines). But pipes of blue ground were gradually discovered in other parts of South Africa, in the Orange River Colony and in the middle of the Transvaal. The Premier Mine is as much as three hundred miles to the east of the Kimberley diamond mines. It was discovered in 1902 and occupies an area of about seventy-five acres. It is considered to be the largest of all the pipes of blue ground hitherto discovered, though only a few of its pipes have been found to be rich in diamonds, many being quite barren or with rock so hard that it is too expensive to work. Nevertheless, the Premier Mine produced the record diamond of the world, which is now inserted into the Imperial Crown of Great Britain and Ireland. This "Cullinan Diamond," when first discovered, weighed three thousand and twenty-five carats (equivalent to one pound five and a third ounces). In 1908 it was cut up into nine large stones and a number of small brilliants, all flawless and of the finest quality.

Photo by permission of the "African World" [*by Leo Weinthal.*

A VIEW IN THE PREMIER DIAMOND MINE OF THE TRANSVAAL.

This mine is situated near the Orange River in the Southern Transvaal, about 300 miles E.N.E. of Kimberley. It has only been worked since 1902, but in the early days of its operations it produced the biggest diamond ever recorded in the world's history—the Cullinan, which is now set in the crown of King George V.

The blue ground of which such frequent mention is made in connection with South African diamonds, is generally supposed to be a volcano breccia "much serpentinized." In appearance it is a hard, bluish-green, serpentine rock, which is found at a certain distance below the surface. Above the blue ground is a layer of yellowish clay about fifty feet thick, and above that again a calcareous deposit, and on the surface red clay. The yellow clay is thought merely to be decomposed blue ground.

The mines are really huge, vertical funnels or craters of this bluish-green rock descending to an

unknown depth, and are believed to be eruptive rock forced up through the strata by volcanic action; and it may be that this action, accompanied by tremendous heat, has fused morsels of carbon imprisoned in the blue ground and turned them into diamonds.

Wine-cellars of Ramses II., near the Ramesseum, Thebes.—These vaulted buildings of brick have only recently been excavated with any completeness by Professor Flinders Petrie. At one time, when little was known about them, they were believed to be granaries, and in the unenlightened days of Egyptian exploration whoever said "granary" at once suggested memories of that legendary person Joseph, who in all probability never entered Upper Egypt in his life, but, if he had an actual existence, was the steward of a Hyksos chief in the Deltaic region of the Lower Nile. These brick buildings date from the reign of Ramses II. A portion of them certainly was used for

Photo by] [*William Cutlack, F.R.G.S.*

THE WINE CELLARS OF RAMSES II. AT THE RAMESSEUM, THEBES.

These strange brick buildings were described at one time as Joseph's Granary. Though now usually called the wine-cellars of Ramses, they were probably used as schools for the temple-priests as well as for storage purposes.

the storage of provisions and wine. Professor Petrie found in these vaults many of the wine jars entire with their corks undrawn, still sealed with the king's seal, and the name and date of the vintage rudely inscribed on the outside, but they were absolutely empty of wine. Whether the fluid had gradually evaporated in the course of the three thousand three hundred years, or whether it had been cunningly withdrawn and the seal replaced—or more probably the offerings had been frauds to begin with, and empty jars had been solemnly sealed and stored—is a matter of guess-work. But these vaulted buildings must have subserved more important purposes than mere cellarage. They formed places of residence for the priests and slaves attached to the temple—the Ramesseum—and there was probably a school here or a seminary for the priests. The earth and rubbish which have been withdrawn from these ruins since 1895 have been gradually formed into an embankment passing round the whole area.

NORTH AMERICA.

CHAPTER XVI.

By GEORGE WHARTON JAMES.

The Grand Canyon of Arizona.—Of all the wonders of North America it will scarcely be questioned that the most wonderful of them all is *The Grand Canyon of the Colorado (Red) River*, located in Arizona, one of the Western States. It will be noticed that it is called "the" Grand Canyon. The name has been appropriated to other and lesser gorges, but it should be distinctly understood that there is but one *Grand* Canyon, and that is the Grand Canyon of the Colorado River in Arizona. To most readers the first idea of a canyon that will arise in their minds is of two steep walls, not far apart, between which sinks a profound abyss. This is the popular conception of a canyon. But it does not serve to describe the Grand Canyon of Arizona. This is in reality a series of canyons, each one wider than the one just below it, growing wider and wider until at the summit, in its narrowest part, it is *twelve miles wide.*

Imagine the two banks of a river—the Thames, for instance, at the Embankment—being twelve miles apart, and the top of the Embankment from *six to eight thousand feet* above the level of the river. *This* is the Grand Canyon. The Colorado River flows through a great V-shaped trough in a crystalline mica schistose rock, commonly and locally called granite. The river is about two hundred to three hundred feet wide; the granite

Photo by permission of [*J. Muenchhagen*

GRAND CANYON OF THE COLORADO RIVER.

Flowing at the base of these gigantic cliffs, the Colorado River traces the course of a mighty primeval river which chiselled out a road through the limestone mountains with the force of a Titan.

from fifty to one thousand feet in height. Interposed upon the granite is a series of stratified rocks —the earliest so far discovered—known as the Algonkian. These originally were ten to twelve thousand feet thick. They are now only about five hundred, and are tilted to such an angle as to show great unconformity to the strata above. These latter strata follow in regular sequence, varying in thickness from a score of feet to a thousand, each stratum, however, irregularly receding from the centre of the canyon, and thus making it wider at each uplift. In several instances the recession of the cliffs is so great as to have left a wide plateau, and these plateaux add an effective charm to the stupendous scenery, and afford visitors considerable opportunity for sight-seeing that otherwise would be lost. The uppermost stratum now found at the Canyon is the cherty limestone of the Upper Carboniferous period.

[Photo by] [The Photochrom Co. Ltd.

HANCE'S TRAIL, CANYON OF THE COLORADO.

A typical scene of the Canyon. When the sun lights up these turrets and peaks, the eye can scarcely bear the blaze of gorgeous splendour.

Stand upon the "rim" with me and let me attempt to describe what can be seen. Here one never speaks of the "edge" of the canyon. We are on the south "rim." Just behind us is the magnificent hotel, El Tovar, built at the expense of a quarter of a million dollars. Before us, sinking at our very feet, is the vast abyss. No river is in sight. It is completely lost in the rocky depths. We are partially hidden in the curve of an amphitheatre, the two arms a mile or two apart, and each jutting out for half a mile or more into the canyon, and forming two striking scenic points. The one to the west is called Maricopa Point, and the one to the east, El Tovar Point. Let the eye follow down the layers of rock of either of these points. On the top the creamy-brown strata of the limestone are about six hundred feet thick; just below are another six hundred feet of a beautiful brownish sugary sandstone. Then there comes a sloping talus, upon which ragged junipers grow, leading the eye down to a rich chocolate sandstone some three or four hundred feet thick. Below this is more talus, and then a stupendous wall nearly a thousand feet high, locally called the red-wall limestone. In reality it is a beautiful cream colour, but the red oxides from the strata above, washed down by the rains of many centuries, have stained the limestone so that it is likewise red.

At about the foot of this steep wall a plateau extends, two or more miles towards the heart of

View of the Canyon from Hance's Cove.

Ayer's Peak, towering 3,500 feet above the Plateau.

From Stereo copyrights by]

Faults in the Serpentine caused by volcanic disturbances of the strata.

[*H. C. White Co.*

Cliff at Bissell's Point, looking down on the most wonderful watercourse in the world.

THE GRAND CANYON, COLORADO.

the canyon, and then seems to drop into the deepest recesses, known as the " Inner Gorge," through which the river sullenly roars on its way from the mountains to the sea.

But while I have thus calmly described the rocks the eye has seen far more than my words have conveyed. The sun has lit up the vari-coloured rocks until they have blazed in a gorgeous splendour unknown to the ordinary mind, and associated only with dreams of the Arabian Nights. To the opposite wall in a straight line it is ten miles, and the space below us, though an abyss, is thronged with a vast multitude of objects so vast in size, so bold and majestic in form, so infinite in details and so striking in colour that, as the truth of them enters the mind, it is aroused to the keenest emotion. The chief over-ruling feature is the colossal wall on the opposite side, and yet the word " colossal " must be stretched to make it convey a sense of four thousand, five thousand, or even more thousand feet in height. How insignificant the Colossi of the ancients beside this marvellous work of the ages! Ordinary words mean nothing in its presence. One needs a new coinage.

How came this stupendous canyon into existence? The commonly accepted theory is that the ten to twelve thousand feet of Algonkian strata were deposited soon after life appeared upon the Earth, and then an epoch of degradation occurred when these strata were cut down to their present thickness of five hundred feet. Then in some great cataclysmic disturbance, the strata were twisted, tilted and curved out of all semblance to their original form. Sheets of lava overflowed some portions and then the whole mass slowly sank into the deep bed of the primeval sea. As the sinking continued during long ages of pre-historic time the later strata were deposited until not only the vast sheets of the Upper Carboniferous we now find on the rim were there, but several thousand feet of later strata of the Permian, Jura-Trias and Eocene periods were superposed.

Photo by] *[The Photochrom Co. Ltd.*

GRAND CANYON, COLORADO

There is no view in the world so bewildering as that of the Grand Canyon. Pinnacles and towers and gigantic buttes arise everywhere in magnificent confusion: each one dwarfing his neighbour into insignificance, yet each one a mountain.

THE GRAND CANYON OF THE COLORADO RIVER, ARIZONA

The Grand Canyon is acknowledged to be incomparably the world's grandest natural wonder. Within the majestic strata of the Canyon carved by the Colorado River and its countless tributaries wind their ways for over 200 miles. Most of the walls of the Canyon rise to an elevation of 5000 to 6000 feet, and display every variety of [illegible]

Now there began a reversal of the process. Uplift commenced, and it was at this time the Colorado River was born. Its waters condensing upon the first peaks that emerged from the vast sea, it made its own irregular channel. As the uplift continued, the channel it had made persisted and cut deeper and deeper. Earthquakes, titanic struggles of the elements, shatterings of lightnings and thunderbolts all did their deadliest work, but the river remained—its course slightly changed now and again by some unexpected split in the slowly-ascending mountain masses. Millions of tons of shattered rock, sand, silt and other débris were swept into the river's channel by the tremendous storms that at times flooded the face of the country, and this only served, by its rasping power, to help the river cut its pathway down deeper. The Eocene strata were carried away, and so were those of the Trias, Jurassic and Permian periods, save for fragments found north and south of the canyon, miles away. Sometimes the uplift ceased for a longer or shorter period, and it was at such times as this that the river attacked the bases of the cliffs in the gorge it had already carved, and thus widened out the canyon and constructed the plateaux we now find. At last the work was concluded, and when man came upon the earth he found this canyon ready for his exploration—at once his despair, his delight, his allurement and his wonder.

From Stereograph copyright by] [*H. C. White Co*

POMPEY'S PILLAR, THE GRAND CANYON.

Pompey's Pillar stands out on a small spur of rock on the "South Rim." It is evidence of the great forces that have gone to the making of the mighty gorge, and remains a weather-beaten giant who has outlived the passing of æons.

As far as is known the first white man to gaze upon the Grand Canyon was Cardenas, one of the lieutenants of Francisco de Coronado, that favoured son of fortune who came from Spain, expecting to emulate Cortés and Pizarro in the gaining of fame and untold wealth in the new land. But in the New World his fortune changed, and he gained nothing but knowledge (which he did not value) and disgrace, which sent him to his grave a broken-hearted man. It was in 1540 that he started from New Spain, with as gallant and gay a band of *Conquistadores* as the land had ever seen, to go in search and conquest of the far-famed "Seven Cities of Cibola" that Marcos de Niza had reconnoitred, and where wealth and fortune were supposed to abide. He ultimately reached the seven cities of Zuni, and discovered the peerless cliff-city of Acoma, and sent his lieutenants, Cardenas to the discovery of the great river and canyon to the north (the Grand Canyon of the Colorado River), and Tovar to the discovery of the villages of the Hopituh Shinumo (the People of

Peace), whose wonderful cliff-homes and religious ceremony, the Snake Dance, I shall presently describe.

Cardenas and his men reached the " rim " of the canyon, " which seemed to be more than three or four leagues above the stream," and he pathetically describes the attempts of some of his men to reach the river. They climbed down the cliffs with incredible daring and spent three or four days, only to find themselves apparently as far from the river as before.

Little or nothing was really known of the canyon, however, until 1869, when Major J. W. Powell, who was just about to be appointed to the high position of Director of the United States Geological Survey (which he completely organized), determined to run its complete course from Green River, Wyoming, to its mouth at the Gulf of California. It should first be explained that the Grand Canyon is but a small portion of the whole canyon system of the great Colorado River and its tributaries. The name " Grand," however, is given only to that most stupendous part of the system found in Arizona, where the gorge is deepest, widest and most sublime. This portion is but two hundred and seventeen miles long, and begins at the end of Marble Canyon (at the junction of the Little Colorado River), and terminates in the desert at the Grand Wash.

Stereograph copyright by] *[H. C. White Co.*

THOR'S HAMMER, THE GRAND CANYON

Pompey's Pillar and this rock, which has been given its name on account of its likeness to the weapon of the Thunderer, are two of the most striking examples of erosion that the Grand Canyon affords.

With specially constructed boats Powell and his brave band of explorers, on the 16th of May, 1869, left Green River City. For three months they braved the unknown dangers of rapids, cataracts, whirlpools, eddies and jagged and cruel rocks. For days and nights at a time they were wet through and shivering with cold. Occasionally their progress was so slow that they made only a mile or two a day—having to carry all their supplies over the rocks, make a portage, —and again they went with such fearful rapidity that eight or ten miles would be made in an hour. Several times their boats were overturned and their lives jeopardized by the dashing waves, and three times their boats were smashed, finally one of them being so dashed upon the rocks as to float away in splinters and matchwood. Their provisions almost gave out, and the few they had were mouldy and rotten with constant soaking, which no care or forethought seemed to be able to prevent. Three of the party determined to go no further (when they had almost accomplished the dangerous part of the journey), and they were permitted to climb out and seek to return to civilization. Poor fellows! they were the only ones to lose their lives, for they came to the camp of some Indians in Southern Utah whose squaws had been badly treated by some evil miners, and they were taken for the " white brutes " and slain.

Later, Major Powell made another expedition and the records of his trips read more thrillingly than the wildest romance.

Now, the Santa Fé trans-continental railway from Chicago, Illinois, to Los Angeles and San

Photo by] [*Underwood & Underwood.*

THE GRAND CANYON, COLORADO

Terrace upon terrace, carved out of the brilliantly-coloured strata of the Canyon, tower one above the other to so great a height that the river is lost in the precipitous depths of the lowest gorge.

Photo by] [*The Photochrom Co, Ltd.*

A VIEW OF NEW YORK FROM JERSEY.

A remarkable view of the city of sky-scrapers. It is the immense value of land in New York City that has called the sky-scraper into being, and great is the economy of space effected by these gigantic structures.

Francisco, California, passes within sixty-three miles of the south rim. At Williams, Arizona, a branch line starts and conveys passengers to El Tovar Hotel, which is situated on the very brink. Thousands of visitors, therefore, are now annually enjoying the sight of this incomparable " Waterway of the Gods," which is one of the greatest things the eye of man has ever gazed upon.

The Sky-Scrapers of New York City.—Over thirty years ago, when a Cunard steamer first bore me into the harbour of New York, the tallest building that arrested my attention was one upon which the great advertising soap-maker, B. T. Babbitt, had placed his name, and within the walls of which his famous soap was being made. To-day that building is so dwarfed that one can scarce find it in the perfect forest of elevated buildings which tower heavenward, as if the modern man were certain that he could accomplish that in which the builders of the Tower of Babel failed.

To many people, who are not familiar with the existing conditions, sky-scrapers are an architectural blot, a disgrace, a confessed retrogression. To thus argue is to reveal oneself ignorant of the fundamental principle upon which all architecture is based, viz., that of meeting the actual necessities of mankind. Utility is the first essential of beauty, and the latter without the former is false, is pseudo-beauty, which cannot stand the test of critical examination and analysis.

The sky-scrapers of New York directly meet this fundamental necessity. They demand recognition as beautiful structures because they first of all meet, with marvellous adequacy, the pressing needs of mankind. Whatever we may say of the wisdom or error of men herding in cities to transact the business of the world, none can question that it is the only way, as far as we are now able to see, that it can be done. As the populations of cities increase the superficial areas of the cities correspondingly increase, until distances become destructive to the speedy transaction of those elements of business that require personal attention. Hence some method was necessary by means of which vast business interests might be attended to in exceedingly circumscribed areas. The development to its present perfection of the *elevator* (American for *lift*), and the sky-scraper have made this possible.

One of the earliest of the sky-scrapers was the Owings building in Chicago. Here was thoroughly tested the steel-frame structure. For in this steel frame was the solution of the whole problem. These buildings are, in the main, nothing but shells of brick, stone, marble, porcelain or terra-cotta

facing, placed over a skeleton frame of structural steel-work, of exactly the same kind of construction that we see in the great steel railway and traffic bridges across ravines and rivers.

New York was not long in noting this new architectural departure, and one by one, with startling rapidity, sky-scrapers began to spring into existence, until now, the traveller crossing the Hudson River from Jersey City and approaching New York for the first time, is amazed at the white forest of peerless structures that indicates the business portion of America's commercial metropolis. Before October 1, 1909, there were fifty-one of these towering buildings actually erected and occupied, the lowest number of stories being Wanamaker's Store, on Broadway, at Eighth and Ninth Streets, fourteen stories, though its height, two hundred and seventeen feet six inches, is higher than the Ansonia Hotel, on Broadway, at Seventy-Third and Seventy-Fourth Streets, with its sixteen stories and one hundred and eighty feet.

From October 1, 1909, to December 1, 1910, plans were filed with the City Building Commission for sixteen more of these majestic structures, ranging from fourteen stories to forty-two, and from one hundred and sixty-five feet high to six hundred and twenty-five feet. These buildings are all under construction, and many of them ere this time (April, 1911) are being actually occupied, such are the rapid modern methods.

The Flatiron Building.—One of the most unique of all the New York sky-scrapers is the so-called Flatiron Building, which stands at the south-west corner of Madison Square Garden, at the intersection of Fifth Avenue, Broadway, and Twenty-Third Street. Fifth Avenue and Broadway are not parallel streets, though they run north and south, and, crossing each other at this point, they make a narrow X. The northern half of this X, which, of course, is a V, is unoccupied, and is converted into an open space, thus connecting and widening both Broadway and Fifth Avenue for the short distance it covers. But the southern half of the X, the inverted V, belonged to an owner who determined to erect thereupon a tall office building, which should be its own best advertisement

From Stereograph copyright by] [*Underwood & Underwood.*

"THE FLATIRON" BUILDING, NEW YORK.

This structure is exceedingly popular in New York, both as a remarkable building and as a convenient centre for offices. Originally named after the owner, it was popularity that dubbed it "The Flatiron."

by its peculiar shape. This is the real origin of the Flatiron Building. Grotesque though it is, it is one of the most successful and sought-for office buildings of this section of the City. The " nose " of the structure is but a few feet wide, and even at Twentieth Street, where it occupies all there is of its complete block, it is only wide enough to allow of eight windows of ordinary size. It is twenty stories in height and from pavement to cornice is two hundred and eighty-six feet high. Its grotesqueness and its isolation seem to emphasize its towering height, for it looks down in insolent superiority upon fine buildings, which, when first erected and long after, were deemed architectural triumphs.

Photo by] *[Underwood & Underwood.*

THE SINGER MANUFACTURING CO.'S BUILDING.

This gigantic building was denounced first of all by the City authorities as "visionary," but the architect was able to demonstrate its practicability, and it has become one of the boasts of New York.

When its owner, Fuller, first named it, he called it after his own name, but the public would have none of his name—the building was the " Flatiron," so wisely yielding to the popular clamour, the Flatiron is now its official designation.

The Singer Manufacturing Company's Building.— When this stupendous structure was first projected, its architect was denounced as visionary, and there was a general call upon the City Council to limit the height of such buildings and refuse the Singer Company and its contractors a permit. But after full discussion the architect showed the practicability of his ideas, and he was allowed to go ahead and demonstrate them. The main building is a striking structure, even though it stood alone, but rising above it, like a new style of delicate and artistic minaret, is the tower, twenty-five more stories in height, and giving the whole building a total of forty-one stories and six hundred and twelve feet one inch in elevation above the side-walk. In the tower alone there are over one thousand different offices, and there are as many more in the main building. It is hard to contemplate what a vast hive of industry a building must be that contains two thousand offices, each one the radiating centre of business that perhaps encircles the globe, or reaches to the heart of the darkest corner of darkest Africa.

The view from the summit of the tower is as near to that of a balloon or an aeroplane as most ordinary mortals so far have attained. The whole of Greater New York, with its boroughs of Manhattan, Brooklyn, Queen's, the Bronx and Richmond, is spread out like a map at one's feet. The cars and elevated trains seem like the toys of children, and the men and women walking about like the microscopic creatures of an anthill. The river, with its spider-web-like bridges—the great Brooklyn Bridge, the newer and later bridges of Manhattan, Williamsburg and Queensboro—and its arms, encircling the humming hives of industry, lead the eye away to the far-away ocean, or the near-by Jersey Heights and the Palisades. Beyond stretch the Jersey marshes and the cities of Newark, Paterson, the Oranges, etc.

Photo by] [*Byron,*

THE METROPOLITAN LIFE BUILDING AT NIGHT.

This is the most magnificent building of New York and is the highest in the world. The tower, of white marble with a gilded dome, reaches a height of 700 feet 3 inches. The terminal consists of an eight-sided lantern, from which a powerful flashlight gleams throughout the night.

Photo by] [*W. H. Rau.*

THE METROPOLITAN LIFE BUILDING, NEW YORK.

The immense size of the building and the stupendous tower, encased as it is in white marble, make this sky-scraper a conspicuous feature of New York. It is only through the employment of a steel framework that the erection of such a structure is made possible

In a windstorm the sway of the tower is distinctly to be felt and seen, though I am not sure whether any measurements have been taken to determine the actual sway during certain wind velocities. All this, however, has been perfectly provided for in the steel skeleton of the structure, and in the joints of the sheathing, and as yet everything has worked out as successfully as the architect planned and prophesied.

Metropolitan Life Building.—But by far the king of all the tremendous and colossal structures of New York is the Metropolitan Life Building, situated not far from the Flatiron Building on the eastern flank of Madison Square and on Twenty-Third Street. The main building occupies the entire block bounded by Madison and Fourth Avenues and Twenty-Third and Twenty-Fourth Streets. It contains eleven stories and is one hundred and sixty-four feet high; the tower, containing fifty stories above the sidewalk level, reaches an altitude of seven hundred feet three inches. Each avenue front is two hundred feet and each street front four hundred and twenty-five feet long, and the building has a girth of one thousand two hundred and fifty feet, and a total superficies of three hundred and forty-five thousand square feet. The entire exterior is faced with pure white Tockahoe marble, requiring for that purpose about half a million cubic feet.

Photo by [*H. C. White Co.*

CLEOPATRA TERRACE, YELLOWSTONE PARK.

These famous sinter slopes are the result of the mineral deposits of hot springs. The formations of Cleopatra Terrace are the most recent, and are considered the most beautiful of the terraces in Yellowstone Park.

The dimensions of the tower are seventy-five feet on Madison Avenue and eighty-five feet on Twenty-Fourth Street. In its general design and outline it is affiliated to the famous Campanile of St. Mark at Venice, which has been taken as a prototype. It has been harmonized, however, with the main building. The main shaft extends from the sidewalk to the twenty-ninth and thirtieth stories, where boldly projecting, double-bracketed galleries, with deep arched loggias of the Ionic order, with a broad frieze cornice and balustrade, mark the crowning adornments. Below this, at the twenty-fifth, twenty-sixth and twenty-seventh stories, great clock dials twenty-six and a half feet in diameter are inserted on the face of the main shaft at all four sides, each one framed in elaborate and clever carving.

The loggia section extends through the thirty-first to the thirty-fifth stories. Over its balustrade,

four hundred and fifty-four feet from the side-walk, the walls of the tower are set back, and continue thus for four stories, forming a massive plinth or base to the pyramidal spire which supports an octagonal turret, whose gilded dome contains the forty-eighth and forty-ninth stories.

The exterior marble-work ceases with the windows of the forty-eighth story, from which level up the tower is cased with gilded copper.

The highest look-out is reached at the balcony of the fiftieth story, six hundred and sixty feet above the side-walk level, whence one of the most wonderful views in the world may be obtained. Here are visible the homes of over one-sixteenth of the entire population of the United States. The terminal feature consists of a great electric eight-sided lantern, eight feet in diameter, from which powerful flashlights mark the hours of the night.

In this tower there has been no striking departure from precedent other than in size. Its ratio of height to width is as one to eight and a quarter, nearly the same as its prototype at Venice, and about the proportion of a sturdy Doric column. The monument at Washington has a ratio of one to eleven; the Campanile at Florence, as it stands, one to six and a half, or had the pyramidal termination originally designed been built, one to seven and a half; the Tower at Cremona, one to nine and a half; the Campanile at Pistoia, one to nine; the Belfry at Bruges, one to nine; Madison Square Tower, one to nine, and its prototype at Seville, one to six. Comparing the relation of height to environment, the Victoria Tower, London, is four and one-fourth times as high as the Houses of Parliament; St. Mark's Tower was five and a half times as high as the adjoining Liberia, five times as high as the Doges' Palace and the buildings surrounding the Piazza, and twelve times as high as Sansovino's Loggetta that nestled at its base; the lantern of the Capitol at Washington is three and one-half times the height of the main building.

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PULPIT TERRACE, YELLOWSTONE PARK.

The beautifully sculptured masses of these terraces are shaded from pale cream to rich chocolate colourings.

The Metropolitan Life tower is four times the height of the main building. It contrasts favourably, therefore, with the examples cited, in its ratio of bulk to height, and fits well in its own peculiar environment.

The Mammoth Hot Springs, Yellowstone National Park.—The Yellowstone is the largest of the National, or State, parks of the United States, comprising three thousand three hundred and twelve square miles, not including the forest reserve which adjoins it. It is a veritable wonderland and stands unique in its fascination. It was first seen by a white man in 1807, but little was known of its marvels until 1870, when the Surveyor-General of the new state of Montana, H. D. Washburn, with a party of citizens and a small escort of United States cavalrymen, under

Photo by] [*The Photochrom Co. Ltd.*

JUPITER TERRACE, NATIONAL PARK.

A view of the higher range of these immense crystal terraces, which are formed by the evaporation of mineral springs and are coloured by the presence of innumerable microscopic plants

Photo by] *[The Photochrom Co. Ltd.*

THE MAMMOTH HOT SPRINGS, SUMMIT POOLS.

The visitor gazes down upon acres of water, divided, subdivided and re-subdivided into basins of every size and shape and of the most brilliant hues.

Lieutenant Doane, made an extended tour of the region. Lieutenant Doane made a report to his superiors which is a classic. The result of this exploration was that it was duly set apart by Congress as a National Park for the enjoyment of the people for ever.

It is a land of geysers, hot-springs, waterfalls, obsidian cliffs, coloured terraces, mountains of petrifactions, hills of brimstone, forests, streams and a canyon as picturesquely vivid in colour as the Grand Canyon of Arizona is overpowering in majesty. It embraces in its limits snow-clad mountains which tower into the pure blue of this ineffable sky from ten to fourteen thousand feet above the sea. It has one valley with an elevation of not less than six thousand feet, and contains a hundred geysers, over three thousand six hundred springs and pools, besides mud-springs, or paint-pots, as they are commonly called.

While fascinating to the mind, the Mammoth Hot Springs are the least interesting of all the varied scenes and phenomena the Yellowstone Park presents. Hot water is hot water, whether in a bath-tub or in the Yellowstone Park. The only difference between the one and the other is that in the latter region the hot water is highly impregnated with calcareous matter, mainly carbonate of lime and hydrate of silica. When this hot water bubbles out from the interior of the earth in the form of springs, some of it evaporates and thus speedily deposits on the surface a sediment of the calcareous and other matter it holds in solution. The result is the building up of pools, walls, embankments, terraces, etc., of most wonderful form, structure and adornment. The major portion of these are found on Terrace Mountain, which is in full view of the Hot Springs Hotel.

near which is the administrative centre of the Park. Being a National Park, it is under federal control, and its affairs are administered by officers of the United States Army. Here is a green plaza, flanked on the east by the officers' quarters and the barracks of the soldiers. On the opposite side rises Terrace Mountain with its richly-coloured, steaming, marvellously sculptured, carved, traced and embroidered terraces. To the north is the hotel. The chief terraces are Jupiter, Pulpit and Cleopatra. The latter is the latest of the formations and consequently is one of the highest, for the evidences are clear that these terraces have been slowly built up from the level of the Gardiner River. Doubtless the hot springs made their first outlet there, and as the hot waters slowly trickled out of their basin they deposited the mineral which little by little heightened the basin's edge until the water had to find another course. Thus another elevation was erected, and then another and another, the spring moving its outflow to overcome the obstacles of its own creation. To many visitors Cleopatra Terrace is the most beautiful of all, but that may possibly be because of its newness. Pulpit Terrace, as its name implies, is shaped somewhat like one of the old-fashioned pulpits. Its colours are of delicate cream and a rich chocolate. Jupiter is the one oftenest visited and described.

Some of these terraces, as I have before stated, are brilliantly coloured. When first discovered, this was assumed to be the result of decomposed mineral substances held in solution by the water, but scientific investigation has revealed that it is caused by the presence of minute or microscopic plants, known as blue-green algæ, which can exist in water at a temperature of 185° Fahr. These are red, pink, black, canary, green, saffron, blue, chocolate, orange, violet and yellow, with infinite gradations of hue and shade. To those who know, each of these colours denotes a certain temperature, the range of colour corresponding to the range of heat.

One may climb the slopes and view the pools of varicoloured waters, and examine closely the fine work of Nature's accomplishing, and the higher one gets the more interesting, in some regards, does the enlarged view become. And here one discovers another fact; that

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LIBERTY CAP, YELLOWSTONE PARK.

This enormous sinter husk of an extinct geyser derives its name from its likeness to the headgear of the American soldiery of 1774. The diminutive appearance of the spectator demonstrates the vast size of the "Cap."

is, that there are often several different colours in the same pool. This suggests different temperatures, caused either by springs of varying heat, or else it is that the water from the same spring suffers quick and marked changes according to the varying distances from the outlet.

That these pools and terraces are akin to the geysers (which we shall later visit), is proved by the fact that not far from Jupiter Terrace is Liberty Cap, a standing monument-like shaft, shaped somewhat like the old-fashioned liberty-cap of the American revolutionists of 1774, and which was unquestionably at one time the shaft of a geyser. The Giant's Thumb, near by, is a similar but smaller object.

In some cases there are vacant spaces or caves under the terraces and several of these can be seen or entered. There are Cupid's Cave and the Devil's Kitchen, into the latter of which a ladder is placed for those who wish personal interview with his Satanic Majesty's cook.

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THE DEVIL'S KITCHEN, YELLOWSTONE PARK.

Occasionally the mineral deposit of the hot springs has settled in such a way as to form caves and spaces underneath the terraces. Some of these caves, of which the Devil's Kitchen is chief, can be entered and examined by the adventurous

The wonder of the traveller is excited by this introduction to the Yellowstone Park, which is thest orehouse of many further wonders that are yet to be revealed.

The Cliff Dwellings of Mancos Canyon, Colorado.—In the south-western corner of the State of Colorado, some twenty-five years ago, two cowboys, one of whom I knew well, Richard Wetherill, were riding over the Mesa Verde, hunting for stock which had eluded them. The whole region was a somewhat elevated plateau (as the term *mesa* implies), cut up and seamed by numerous ravines and canyons which made it almost inaccessible, as many of these gorges descended in abrupt precipices, down which there seemed to be no available means of descent; while, on the other hand, if one were in the canyons below and wished to gain the summit of the mesa, there was no means of ascent. The whole mesa was covered with a dense growth of pine, cedar, juniper and spruce, through which it was impossible to see far ahead, and suddenly the two cowboys were startled to find themselves on the very edge of a precipice. Impatiently reining in their horses, and angry at finding their search for the stray cattle again arrested by a useless canyon, they began to look for signs which might indicate in which way their animals had gone. While they were doing this the eyes of one them happened to fall upon the underside of the cliff on the opposite wall of the canyon, and there, to his wonder and amaze, he saw the ruins of a number of walls and towers, with windows, doorways, etc., clearly denoting that they were once the habitations of man. This was the discovery of one of the most

From photo by] [*Underwood & Underwood.*

THE CLIFF-DWELLINGS OF MANCOS CANYON, COLORADO

These ruins were discovered about twenty-five years ago by two cowboys. They are one of the most important groups of cliff-dwellings to be found in the United States.

Photo by] [*Keystone View Co.*

Another view of the cliff-dwellings of Arizona.

important groups of cliff dwellings yet found within the boundaries of the United States.

At the very outset, let me disabuse the minds of my readers of the notion, made too common by sensational and excitable writers, that these cliff dwellings are of remarkable size, wonderful architecture, or imposing grandeur. They are simply rude, crude, aboriginal dwellings, full of a pathetic interest, and, therefore, deserving the most thorough and careful attention of the thoughtful reader and student. Their extent is remarkable, many of them being capable of housing from five hundred to a thousand souls: but it is the deliberate choice of such inaccessible sites that marks them with such tremendous pathos. Why choose homes in the face of cliffs that only birds can ascend? Why hide in this fashion from all ease, comfort, beauty and outlook? What motive could there possibly be for such hiding and such inaccessibility?

Before giving a brief description of the cliff dwellings here pictured, let me state that it is now definitely known that the cliff-dwellers were the ancestors of the present *pueblo* Indians of Arizona and New Mexico. The term "pueblo," however, is a general term, with great latitude in its application. It is simply the Spanish term for "village" or town. Hence, any Indians who live in towns are pueblos, such as the Hopi, the Zuni, and all the Indians who occupy towns on the Rio Grande River (over twenty in number).

Every tribe has its men and women who are the repositories of its past history. Much of this legendary history has been gleaned in recent years, and from it a reasonably accurate general account has been gathered of the migrations of these peoples, their occupancy of the cliffs, and the reason thereof, prior to their settlement in their present locations. The Hopis can clearly be traced for a thousand miles from the south—or, at least, certain clans of their race—and at the time they built and occupied the cliff dwellings they were being crowded on every side by nomad foes, who swarmed upon them, pillaged their cornfields and robbed them of every means of subsistence. Not being a warlike people, they were compelled to solitude and strategy. They learned to climb like the goats; they trained themselves, as a matter of religion, in athletics, so that they could run like the deer; and they then established themselves in these remote and inaccessible places. Towers were built on look-out points that would also answer as places of defence in case of surprise. Their only weapons being bows and arrows, stone-axes and hammers, and possibly a rude kind of lance to which a flint head was affixed, defence was comparatively easy. Their doorways were not closed with wood, for they had no tools with which to saw or cut wood to the required shape. They took

such slabs of flat rock as they found in the region and used those for doors; hence the necessity for making doors as small as possible for two reasons: one, to fit the size of the stone slabs available and to be found, and the other, that the slabs were small enough to be removable. Here, then, is the secret of the small doorways.

They made rude pottery, many specimens of which have been excavated, some of them large enough to hold ten, twenty or more gallons of water, which they gained from near-by springs and stored in their houses in case of surprise or assault. They planted corn in the canyons and on the mesa heights, close at hand, and watched it grow from their outlook points.

In each set of ruins is found a *kiva*, or *estufa*, the former being the aboriginal term for a sacred religious chamber, and the latter being the Spanish term signifying a stove, applied to the same places. These kivas were the assembling-places of the clans for religious purposes, and as many of them were closed in, and even below the ground and without ventilation, they often became so hot and close as to suggest to the old Spanish explorers of three hundred and fifty years ago their name *estufa*, or stove.

Except in a very few cases, all the cliff ruins of the South-West are built of the rude undressed sandstone, or other rocks that were found in a disintegrated condition, or that could be quarried with the rude and simple tools of the aborigines. In the few exceptional cases—one or two of which occur in the Mesa Verde ruins—the stones were carefully selected and then hewn into the exact shape required, doubtless by flint hammers and hatchets, and then dressed by being pounded with round-headed flint hammers.

When the pressure of life upon these poor hunted people was somewhat reduced, they abandoned their cliff dwellings and moved to less inaccessible regions upon the tops of the high mesas, where

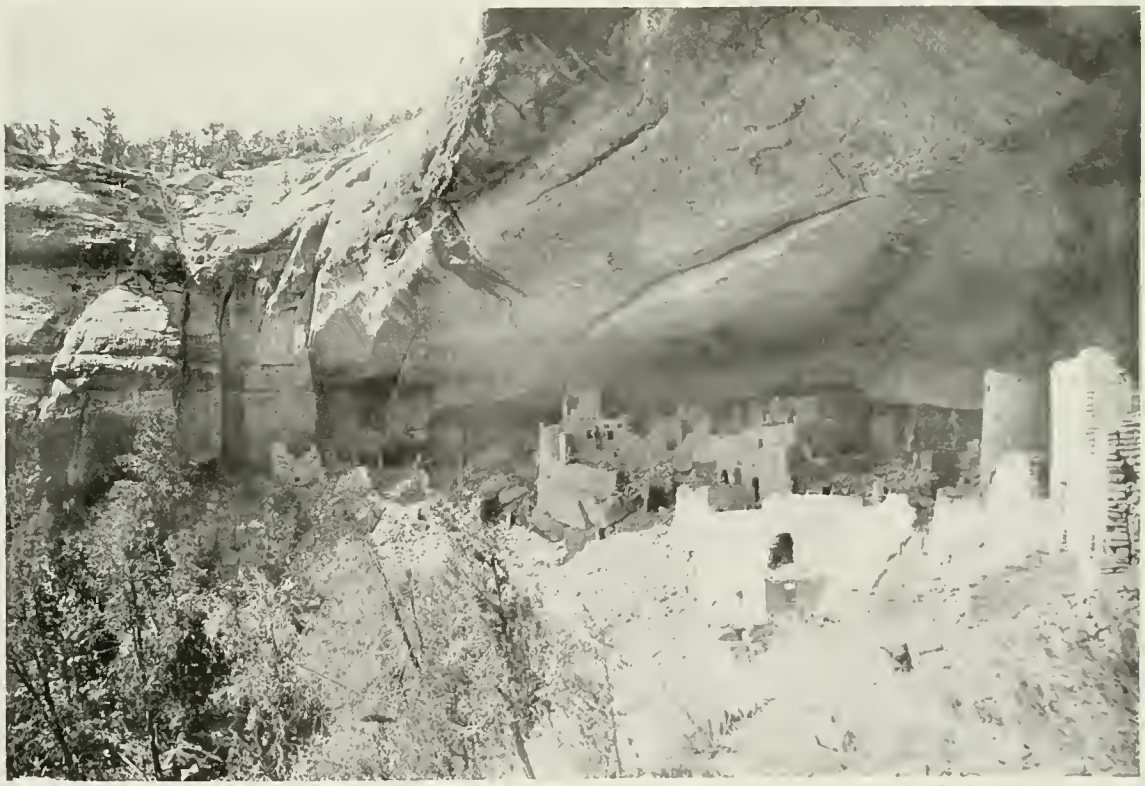

Photo by] [*The Photochrom Co. Ltd.*

THE CLIFF PALACE, MESA VERDE.

These are the dwellings of a non-warlike race, who, in order to save themselves from extermination, built their communal houses in the most inaccessible and so most easily defended positions

their descendants are found to-day. The instinct of self-preservation, so deeply ground into them, however, by stern necessity, led them even in their new homes to choose the places most easily defensible, and construct their houses so that by the mere lifting up of the outside ladder they could instantaneously be converted into forts.

Tree-like Stalagmites in Cave, Grand Canyon of Arizona.—Wherever those displacements and shatterings of the earth's crust called *faultings* have taken place in the region of the Grand Canyon of Arizona, there it is possible to build " trails " from the rim down to the river in the abyss below. This is because the faulting breaks down the massive walls and scatters them in sloping " talus," over which trails are built with comparative ease. In that part of the Grand Canyon reached by the railway, on the south rim, there are five trails that are regularly used, the chief one, of course, being that located nearest to El Tovar, viz., the Bright Angel Trail. A few miles to the west is the Boucher Trail, and twenty miles further the Bass Trail. To the east, sixteen miles away, is the Grand View Trail, and about twenty miles the Red Canyon Trail. Near the Grand View Trail, slightly below the plateau two thousand feet from the " rim," there was discovered, in 1897, by Joseph Gildner, a cook employed at the mining camp of Messrs. Cameron and Berry on the plateau near by, a series of caves of great interest. These caves are in the thickest member of the Canyon walls —the so-called " red-wall limestone," described in the section devoted to the Grand Canyon. They were undoubtedly formed in the earlier history of the Canyon by some chemically-charged water which decomposed the limestone rock, and, carrying it away in solution, left the vacant spaces to be discovered in after ages.

Photo by] [*H. C. White Co.*

STALAGMITES IN A LIMESTONE CAVE, ARIZONA.

There are few more beautiful specimens of limestone formations than these glistening white spires that are hidden in a cave on the Grand View Trail which leads into the Grand Canyon.

The Grand View Caves connect one with another, and I have had the pleasure of exploring and visiting them on several different occasions. The dendritic, or foliage-like mass, here pictured occupies a spot near the mouth of the cave, within a few feet of the entrance, which, however, is so small as to admit no direct rays of light upon the object. The first photograph that was ever made of it was interesting. I had no " flash-light " powder, and it seemed an impossibility. But cutting up all the candles I could spare, I found I had twenty-seven pieces, each of which would burn for a full hour. Focussing the camera, lighting the candles and then opening the shutter, we left the candles to do their work, as we explored the deeper recesses of the caves. On our return the candles

[The Photochrom Co., Ltd.

Photo by]

THE CAPITOL, WASHINGTON.

Standing in wide and beautifully kept grounds, the Capitol is the most important of the buildings used for the administration of public affairs. The pillars that adorn the wings of the main building are huge monoliths

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A HOPI INDIAN VILLAGE, ARIZONA

A Hopi village occupies the most inaccessible position on a "mesa," or plateau. The walls of the houses are made of a rude mud mortar, afterwards plastered over with a smoother mixture and whitewashed

had all burned away. I finally developed the plate and found as excellent a picture there as is the one from which the accompanying print is made.

The Capitol at Washington. —When the Colonies revolted from the Mother Country, and in 1776 declared their independence, her statesmen decided that the capital city of the new republic must be away from any of the immediate centres of population. Accordingly, July 16, 1790, Washington was chosen as the site, and a certain district purchased for purely federal purposes, and named the District of Columbia. This district is therefore under the control of no state. Its government is solely federal. The city proper now covers an area of about fourteen miles in circumference, and in the past ten years has grown and improved with amazing rapidity.

Its government was, in 1874, vested in three Commissioners, under the jurisdiction of Congress. Its population is now (1911) nearing the four hundred thousand mark.

The most imposing structure in the group of buildings used for the administration of the affairs of the United States is the National Capitol Building. Its entire length is seven hundred and fifty-one feet and four inches. Its width is three hundred and fifty feet, and it extends over three and one-half acres in area. Superbly kept grounds, laid out in drives and terraces, surround it, while to the west stretches out the Mall, a park extending to the Potomac River, about a mile away. Many notable pieces of statuary dot the beautifully kept lawns.

The central portion of the Capitol Building is constructed of Virginia sandstone, painted a glittering white. It is upon this section that the great dome is built. Surmounted by a statue typifying Freedom, it towers nearly three hundred feet above the esplanade. It may be ascended by a winding stairway, and the view from the top is well worth the exertion of the climb.

In this central portion of the building are the Rotunda, the Supreme Court Room and Statuary Hall. In this hall have been placed many notable examples of the sculptor's art. Hundreds of the most beautiful paintings adorn the walls of these three rooms. Two massive bronze doors, weighing

ten tons, and commemorating events in the life of Columbus, adorn the eastern side of the building. They cost the Government $28,000. On either side of this main building are wide porticoes.

The buildings, or rather wings of the main building, in which the Senate and House sit, are constructed of Massachusetts marble, and are of later construction than the central portion. The pillars supporting the portico roofs of these wings and of the central part are monoliths whose size creates amazement.

The corner stone of the main building was laid by President Washington on September 18, 1793, and that of the extensions by President Fillmore on July 4, 1851. On the latter occasion Daniel Webster was the orator.

Houses of the Hopi Indians, Northern Arizona.—Within a stone's throw of El Tovar Hotel at the Grand Canyon, is an Indian house, built as the almost exact replica of a Hopi house, in the village of Oraibi. Though a purely commercial proposition, in that it is a store for the sale of Indian curios, it has distinct and decided ethnologic and educative value. I know the original house of which this is the copy. In all save the electric lights, the steam heat and other modern conveniences this is a true copy, and affords to those who cannot go over the Painted Desert the long hundred-mile drive through the sands to the fascinating Province of Tusayan, where these Indians reside in their quaint villages, the opportunity to see and know something of their life, customs and ceremonials. For there are several families of Hopi and also of the Navaho tribes here, engaged in the making of baskets, blankets, pottery, bead-work, silverware and their other industries. As a museum the Hopi House is an important exhibition. Many European national museums do not contain as many and as valuable articles illustrative of the Indians' domestic life as are to be found here. In the right foreground of the engraving is to be seen a large and exquisitely made jar or olla (pronounced "oh-yah") of basket-work, so finely woven that it holds water.

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A HOPI INDIAN VILLAGE, ARIZONA.

This stairway through the cliff leading to the Hopi village could be easily defended in time of assault, and for this reason is chosen by the Hopi Indians as a suitable entrance to their village.

But however true to the reality the Hopi House at the Grand Canyon is, the real way to know the Hopis is to visit them in their own quaint and interesting villages. They reside in nine towns, seven of which occupy almost inaccessible sites on the summits of three mesas, or rocky table-lands, which rise from five hundred to eight hundred feet above the level of the surrounding desert. Imagine a rude and misshapen hand with but three fingers, and these ten miles apart; the arm being the main table-land and the three fingers being the sites of the seven Hopi villages. On the eastern-most mesa are three towns; viz., Tewa, or Hano, Sichumavi and Walpi. Each is reached by a steep and precipitous trail, in many places steps being hewn out of the solid rock. The most northerly town is Tewa. Within a stone's throw is Sichumavi, and yet, strange to say, the people of the two towns speak entirely different languages. The reason is that about the year 1700 the Sichumavi and Walpi Indians were much beset by nomad Indians who harassed them considerably, stealing their flocks and herds, and occasionally their wives and children. At this time a band of Tewa Indians from near the Rio Grande, several hundred miles to the east, were driven from their homes by other hostile Indians, and at the request of the Hopis they came and settled upon this unoccupied site on the mesa to act as allies. In return for their warlike aid they were accorded the right to remain, which they have ever since done. Their own name for their village is Hano, but when the Hopis were asked who they were they replied "Tewas," so that name was also accorded their village, and by it it is generally known.

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THE DANCE ROCK OF THE HOPI INDIANS.

Dancing plays an important part in the religious ceremonies of the Hopi Indians, and this stone, which is the "Dance Rock," is an object of great veneration amongst them.

The houses of all these Hopi villages are built of the "chips" of sandstone found loose upon the top of the disintegrating mesas. The walls are laid up in a rude mud mortar, and generally plastered over with a thick mud known as *adobe* (pronounced "ah-do-by"), and then whitewashed. The architecture is very simple and primitive, yet most interesting. The first remarkable fact about it is that the houses are designed and built throughout by the women. I have seen thirty-six women at one time engaged in building a house. The men sat by in contented restfulness, smoking their cigarettes, while the women were their own paddies, mortar-mixers, hod-carriers and "bricklayers." After considerable persuasion I got the whole thirty-six to consent to my photographing them on condition that I gave to each one calico for a new dress. That night when I distributed the calico at my camp I expressed to the women the pity white women so often give voice to, that they have to do the hard work while their lazy men sit by and do nothing. With spirit these Indian women replied and asked me if our white women were all fools. I responded with a vigorous negative.

[Underwood & Underwood,
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A HOPI INDIAN HOUSE INTERIOR.

These houses are designed and built throughout by women, and furthermore they are owned by the women, together with all the chattels contained in them. Even the crops, as soon as they are harvested, are the property of the women.

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ANOTHER INTERIOR OF A HOPI INDIAN HOUSE.

Notice the baskets, the blankets and the pottery that the women make and sell. The weaving of the Hopi Indian is so fine that the basket-work jars, such as are seen here, will hold water

"But," said the spokeswoman, "they must be. Why should they sympathize with us. We do not need their sympathy. The men have their work to do, and they do it without our interference or help. This is our work. We neither need nor desire their help. Those Above" (they always speak of the Supreme Powers as "Those Above") "have given us the work and strength to do it, and let the men who attempt to interfere with us in doing it beware."

But not only are the houses built by the women. They are owned by them, and, what is more, as soon as the crops of corn (maize), melons, onions, chilis, peaches, etc., are brought in from the fields and orchards by the men, these become the property of the women, so that a man may not sell a shilling's worth of the crops he has himself grown, without the consent of his wife, once they have been put into her care.

As one stands in the public plaza and looks at these houses, he sees that they are built in terrace fashion, generally three stories high, so that they appear to be in three gigantic steps. They were originally without doors or windows in the lower story, and the only way to gain access was by means of rude ladders. One climbed the ladders, and then dropped through a hole in the roof. This arrangement was for purposes of defence. When attacked, the villagers could pull up their ladders and thus their houses became their forts.

Ten miles away from the First, or eastern, mesa, is the Second, or Middle mesa. Upon this are the three towns of Mashonganavi, Shungopavi and Shipaulnvi. The Illustration on page 505 is of the stairway leading up to Mashonganavi. Ten miles further west is the seventh village of Oraibi, the largest of the seven. It used to have a population of about a thousand souls, as compared with two thousand aggregated in the other six villages, but owing to internal dissensions a new village has sprung up from Oraibi in the past ten years, Hotavila, hence Oraibi now does not have more than five to six hundred souls. The ninth village is Moencopi, the agricultural resort of the Oraibis, forty miles away.

The Mount of the Holy Cross.—The State of Colorado is in the heart of the Rocky Mountains. It is a State of sublime scenery. Pike's Peak, Long's Peak, Old Ouray, the Sangre de Cristo range, the Spanish Peaks, Crested Butte, and a score of other mountains—aye, a hundred—give majesty and sublimity to every landscape. Although not so towering in its height, nor so massive in its bulk, nor so impressive in its mighty slopes as some of the others, there yet stands one peak in Colorado that perhaps is better known than all the rest combined. Why is this? It is because, near to its summit, as if especially emblazed by the Divine Creator for a purpose, is the Cross, the symbol of

Christianity, thus giving its name to the mountain—the *Mount of the Holy Cross*. As one rides on the line of the Rio Grande Railway, slowly mounting higher and higher towards Tennessee Pass, one enters a side valley, from which the eye is led upwards to where a majestic peak, like a giant cathedral, pierces the sky, overlooking a wide scene of alpine forest, verdant meadows, sparkling streams and quiet picturesqueness. Seen anywhere it would be attractive, for it presents a noble front of almost unbroken aspect, in marked contrast to the wild ruggedness of the jagged boulders, tossing foothills and mountain torrent which occupy the more immediate foreground. But it is more than the mere mountain that arrests our attention. Carved on its very summit, as if in proud acclaim to the world, is the sacred symbol of Christianity, graven in such colossal size, as though to challenge the attention of every human being within two hundred miles or more.

The Jesuits, the Dominicans, the Franciscans, and other Catholic orders brought the Cross with the *Conquistadores* and planted it, in the fifteenth and sixteenth centuries, in Mexico, and in the heart of what is now United States territory. In Florida, in Texas, in Arizona, in New Mexico, even in Kansas, Jesuit and Franciscan wandered; the Puritan came and brought his stern worship of Christ to New England; and even the freebooter, Sir Francis Drake, allowed his chaplain and men to worship on the shores of San Francisco Bay. For two or three centuries men took possession of parts of this new land in the name of their king and of the Christ who sanctified the hated Cross of Calvary, and yet ages and ages before these men were sired the Divine Father Himself had placed this symbol of His crucified Son upon the brow of this majestic summit in the heart of the country, thus declaring His supremacy and purpose.

Call it chance—the blind working of earthquake, thunderbolt and Nature's sculpturing, that these ravines were so carved as to make them depositories of winter's snows, so deep that they remain throughout the larger part of the year shaped after this universal symbol. Chance is merely the name we give to the working out of great forces that are beyond our puny ken. Here is the fact: for countless centuries this Divine symbol has been lifted on high and reflected to the clouds,

Photo by [*The Photochrom Co. Ltd.*

THE MOUNT OF THE HOLY CROSS, COLORADO.

Carved by Nature on the summit of this majestic peak, the colossal symbol of Christianity dominates a scene of exquisite grandeur in the Rocky Mountains.

reminding the thoughtful mind of those words of Holy Writ spoken by the Crucified Himself: "And I, if I be lifted up from the earth, will draw all men unto Me."

The Clouds of California, &c.—Few people unfamiliar with travel in certain regions can dream of the exquisitely beautiful and marvellously strange clouds that now and again dot the sky in these particular lands. Take the United States, for example. In crossing from the Atlantic Ocean to the Pacific the traveller begins in a region where the sky is generally grey and with clouds similar to those seen continually in England. But as soon as he reaches Colorado and New Mexico the grey sky disappears, scarcely to be seen a dozen times in a year, and in its place appears the clear turquoise sky that for days at a time is perfectly cloudless. Then suddenly, apparently without rhyme or reason, clouds begin to appear of forms, movements and fleeciness totally beyond the belief or comprehension of the man familiar only with the sky of the Atlantic coast.

Photo by] *[Underwood & Underwood.*

A REMARKABLE CLOUD-FORMATION, CALIFORNIA.

This photograph was taken in the Sierra Madre Mountains, South California, and is an excellent example of a cloud-formation totally unknown in this country

The southern portion of the great State of California possesses this exquisitely clear sky for, say, three hundred days in the year. Imagine a sky, as pure a blue as the mind can conceive, that for three hundred days in the year sees never a cloud to mar its spotlessness. Yet there are certain meteorological conditions in this region that produce clouds and fog which are as interesting as they are peculiar. For two hundred and fifty miles Southern California lies open to the Pacific Ocean. That is, there is no mountain range between the valley land and the sea. This allows free and easy access of the breezes from the ocean, without any of the winds that are caused when a mountain barrier, with its passes, stands between the ocean and the land. This open region varies in width from a mile or two to fifty and a hundred miles, and is then arrested by a high mountain chain with peaks six, seven, eight, ten and even twelve thousand feet high. Immediately on the other side of these towering heights the mountains decline rapidly to the sands of the Mohave, Colorado, Arizona and Sonora deserts, some portions of which are below sea-level, and all of which contain little verdure above the hardy desert shrubs, such as the creosote bush,

the salt bush, the yucca, cactus, etc. Here, then, are wonderful conditions for the manufacture of climate that scarce exist anywhere else in the world. When the sun shines upon the sandy face of the barren desert the rapid ascension of the heated air causes a gentle current slowly to flow from the ocean. This invariably begins in the forenoon and moves inland until evening, when there is usually a season of calm. Then, later, the current is reversed and the land breeze comes gently over the slopes of the snow-clad mountains. Under certain conditions of barometric pressure these ocean and desert breezes come laden with moisture, which changes into clouds and fog. There are two kinds of fog generally known in this region—*low* and *high*. The low fog seldom rises above two thousand feet, and if one ascends to an elevation over that, he can look down upon the fog and see it in all its peculiar beauty. Like a fleecy white sea, silent and still, it covers the land below.

The high fog, on the other hand, generally ranges from six to eight thousand feet in height, and one must be on a mountain peak higher than this to be able to look down upon it. A most singularly beautiful effect is produced when there is both a high and a low fog, and the sun shines down through a portion of the high fog upon the surface of the low fog.

The Washington Monument.—The greatest memorial shaft of the world is that erected by the American people of the United States to George Washington, the "father of his country," and first president, in the city which also bears his name—the capital city of the American Republic of the United States. It is five hundred and fifty-five feet high and was thirty-seven years in building.

Photo by] [*The Photochrom Co. Ltd.*

THE WASHINGTON MEMORIAL.

The site of the greatest memorial shaft in the world was chosen by the great President Washington himself. This great white marble column is crowned with a tip of aluminium, so that it never tarnishes

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THE VICTORIA REGIA.

This gigantic water-lily thrives in the tropic heat of the Amazon Valley. The upturned leaves are characteristic of the species, and their vast green surface is supported underneath by a strong framework of twisted tissues.

Its site was chosen by President Washington himself. The foundation was laid in 1848, and the capstone, a conical block of American aluminium, was set in place in 1884. The lower portion of the monument is built of New England granite, faced with crystal marble; the upper part of pure white marble. The top is reached by an elevator or by a flight of nine hundred steps. It has been well said that "the dignity, symmetry and towering height of Washington's character, as it now presents itself to the minds of his countrymen, are well exemplified in the majestic simplicity of his monument."

It is the realization of a popular movement for a national memorial to Washington which began before his death, and crystallized sufficiently to enable him personally to indicate his preference of site. Republics are tardy, however, very often, even in their recognition of the men they most delight to honour, and it was not until the wave of patriotism developed by the year of the Nation's Centennial that Congress determined to finish the shaft begun in 1848. To General T. L. Casey, Chief of the U.S. Engineers, the work was entrusted of enlarging and strengthening the foundations, which he successfully accomplished, making of them a solid mass of blue rock, one hundred and forty-six feet square.

The keystone that binds the interior ribs of stone that support the marble facing of the pyramidal cap of the monument weighs nearly five tons. It is four feet six inches high and three feet six inches square at the top. The capstone, which is five feet two and a half inches in height, and about three feet square at its base, was laid December 6, 1884. Its summit was crowned with a tip or point of aluminium, which never oxidizes and is always bright.

Victoria Regia, The Gigantic Water Lily.—There are many marvellous water lilies in the world that have excited the admiration of mankind, and most of them have been found to flourish in some parts of the United States. But most wonderful of all in size is the *Victoria Regia*, here photographed as it grows in Como Park, near to Lake Como, a favourite resort of the residents of the north-western section of the city of St. Paul, Minnesota. This particular lily finds its original habitat in the marshy ponds which cover hundreds of miles of the Amazon Valley. While in the picture leaves are shown from seven to ten feet in diameter, they are known to grow to twice that size in

the heat of their native tropical habitat. The stem is hollow, but solid and firm, and it sends out its framework in such fashion as to securely sustain a larger weight than that of the little maiden who so serenely uses it as her fairy raft. The strength of the leaf is enhanced by the upturned edge, which is a distinguishing feature of this species, and adds in no small measure to the striking beauty of the plant. The blossoms are large and fragrant, of a delicate pink and from eight to twelve inches in diameter.

CHAPTER XVII.

By NUGENT M. CLOUGHER, F.R.G.S.

Mont Pelée.—It will take many years to obliterate the shudder which ran through the civilized world when, in May, 1902, the news of the eruption of Mont Pelée, with the accompanying loss of life, became known. The reports were at first discredited, but when the story was officially confirmed, funds were rapidly organized in every quarter of the world for the relief of the homeless in the French island colony of Martinique.

According to scientific experts, the eruption at Martinique was not so great as that in the island of St. Vincent, which took place in the same month. The area devasted at the former place was certainly not so great, but the terrible loss of life at St. Pierre intensified the horrors of the eruption in Martinique. This city, at one time the chief commercial city of Martinique, was completely levelled to the ground in a remarkably short space of time—destroyed by its proximity to the volcano at the foot of Mont Pelée. One day the streets were thronged with people, business being transacted and life progressing in the usual way; the next day between thirty and forty thousand of the inhabitants were, almost in an instant, lying dead—buried beneath the ruins and piles of ashes.

During the early months of the year the volcano had shown signs of activity, and on the second and third days in May small eruptions took place, destroying some plantations. On May 8th the final and fatal eruption occurred, devastating one-tenth of the whole island. Great clouds of smoke and a mass of fire appeared, whilst molten lava and ashes fell on the city and its surroundings, destroying, indiscriminately, people,

Photo by] [*Keystone View Co.*

MONT PELEE

This view of Mont Pelée was taken within 800 fee of its riven crest. The volcano was dormant for many years; but since the eruption of 1902 it has remained in a state of continual activity.

buildings, and ships, only one of the latter escaping. Then, many of those who had escaped the lava and ashes were caught in the merciless toils of the dense gases that settled upon the city, and suffocated by the noxious fumes.

In addition to the loss of human life, the financial loss is said to have amounted to four million pounds!

The north end of the city was buried with ashes, the demolition being so complete that the remains of the houses could not be seen by those who afterwards visited the scene.

As early as April 25th sulphur vapours descended on St. Pierre, the air becoming so charged that many animals fell down dead in the streets. On May 2nd, the deposit of ashes became sufficiently deep to stop traffic, and yet comparatively few of the inhabitants attempted to flee from the doomed area. During the few days preceding the great calamity a deluge of water from the volcano also assisted to destroy many of the surrounding villages. The lava, ashes and water were not the only destructive agents, however, for on May 5th mud flowed down the side of the mountain with great velocity, burying many of the buildings in its path.

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MONT PELÉE IN ERUPTION.

This outburst of smoke was computed by eye-witnesses to have attained a height of over three miles

The early morning of May 8th seemed no worse than some of the preceding ones, but at eight o'clock great clouds issued from the mouth of the volcano, and within two minutes the city was destroyed and the populace lay dead.

On the 20th of the same month a second eruption took place, which is said to have been as violent as the first, although the damage done was small compared with that of the previous devastation.

Mexico.—For centuries the early civilization of Mexico has been a mystery. Theories have come into being, lasted for a time, and then disappeared as unlikely or impracticable. In the sixteenth century, when the Spaniards came into the mainland from the islands of the West Indies, they wondered at the ruins they found—great temples with massive columns, an old civilization with official administration and Courts of Justice, arts and crafts of no mean order. They wondered then—we are wondering even to-day!

It is now considered most likely that the old races of America are connected in some way with the Tartar tribes of Asia, perhaps long ago, when Asia and America were connected by land.

Explorers such as Humboldt have investigated the matter, and find that the peculiar animal calendar of the tribes of Asia is reproduced in Mexico. There are many other points of similarity between the ideas of the inhabitants of the two continents which lead to the opinion of to-day that there has been some connection at a remote date.

The name Mexico itself takes us back to the old days, for its origin was due to the existing tribes who called themselves Mexica or Asteca.

[*Underwood & Underwood.*

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MONT PELÉE IN ERUPTION.

A striking view of a grand column of smoke issuing from the volcano. Terrible as this eruption appears, it is nothing to the greater outburst of lava and volcanic ash which swept away the city of St. Pierre and destroyed its 30,000 inhabitants in an instant.

Photo by] [*Pierce Co., Washington.*

AN ICE CAVE, PARADISE GLACIER.

Paradise Glacier is one of the fourteen living glaciers on Mount Rainier or Tacoma, one of the highest peaks of the Rocky Mountains. The interior of an ice grotto is usually flooded with a brilliant effect of blue and green light.

These Aztec Indians moved from place to place over the Valley of Mexico, and in 1325 formed a settlement that has through the years grown to be the Mexico City of to-day, the capital of the country.

The reign of the Aztecs was comparatively modern, for long before them were the Toltecs, noted for their knowledge of the goldsmith's and silversmith's arts and picture writing. It is probably due to these people that we have portions of the fine temples and writings that still remain for our wonderment. Where they obtained this knowledge takes us to ages that are lost in mists of antiquity.

The picture writings are particularly interesting, and it is said that had the Spanish not landed in the country the writing would have been discovered again, for, much the same as the Egyptian hieroglyphs gave place to the phonetic signs, and were able to be traced, these writings, too, would have developed into a script that the scholar could have translated and which would have given a key to the picture language. By means of these pictures names of persons and places were recorded as well as dates.

Not far from Oaxaca, in the southern part of Mexico, and almost due south of Vera Cruz, is situated the village of Mitla. Here is the home of some of the finest remains of Mexico's past civilization. Yet these ruins possess no definite history. We do not even know the causes which went to the building of so great a city or the reason of its importance; we are forced to be content with conjecture, which is a poor substitute for historical accuracy.

For this reason they remain unmentioned while ruins in other countries of far less interest are the subject of much learned discussion and many valuable treatises.

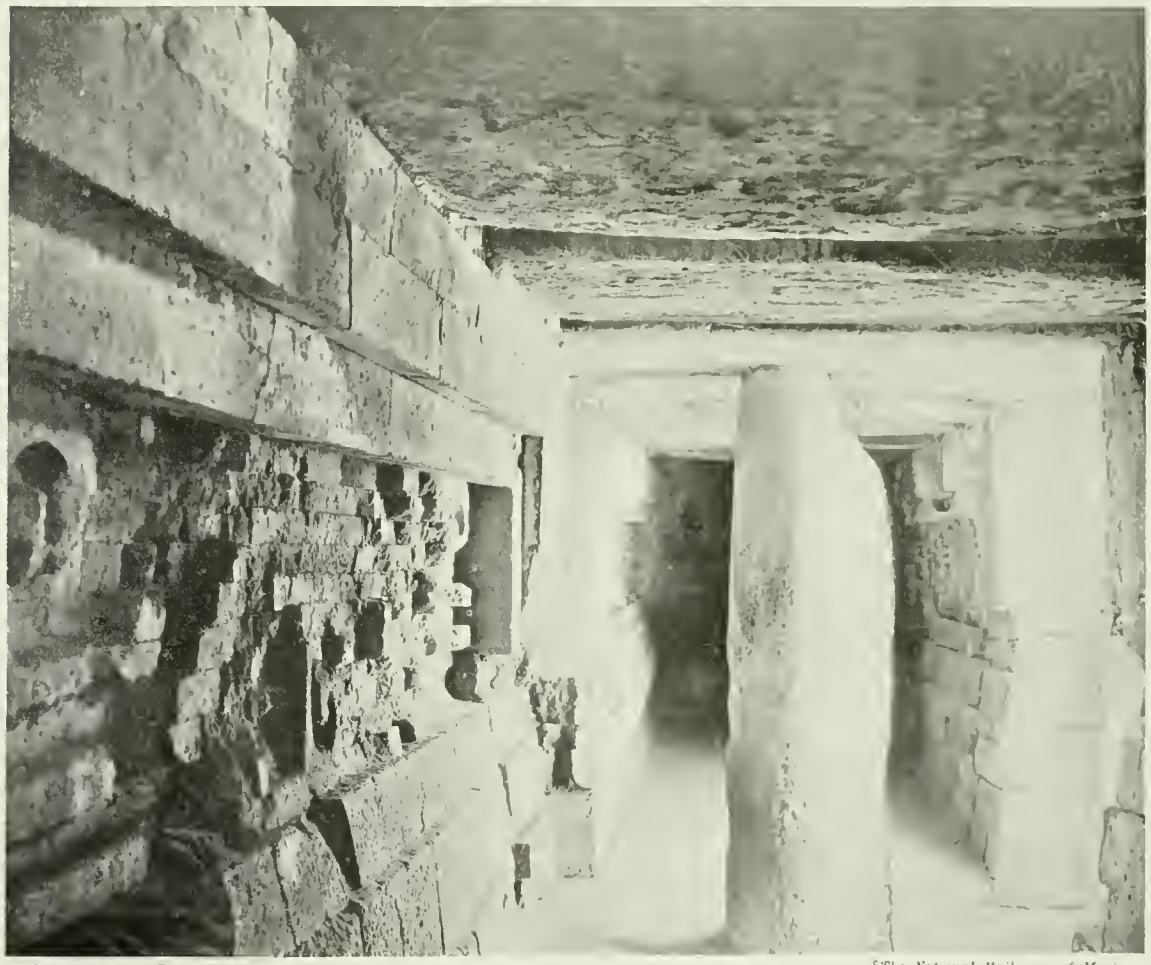
A considerable portion of the ancient site is occupied by the present village, yet much of the old work remains, owing, probably, to its distance from the creek, which, flowing through the valley, attracted the inhabitants to place their thatched houses along its banks and left the older town undisturbed, but disrespect for history has had a share in demolishing some of the old buildings,

for the churches, the market-place, as well as the principal buildings of the newer town, are of stone, and it is not unlikely that much of this stone was brought from the nearest source of supply—the ancient ruins.

The ruins represent cities of less extent and of less importance than many in Yucatan, but the preservation is far superior, which thus renders the present interest considerably greater. The ornamentation here is different from elsewhere. The decorations are, in many cases, geometric, and this is not the case with the ruins of Monte Alban, etc.

The buildings themselves have been erected in groups of four, which, placed in the form of a square, formed a central court, from which the various chambers were entered through small doors. There are, altogether, five clusters of these buildings. The walls are frequently four feet thick, and are finished on both sides either in plaster or dressed stone. Frequently mosaic work was used for ornamenting the interiors of the long, narrow rooms, and this was usually in geometric patterns.

There is much conjecture regarding the construction of the roofs, but it is generally thought that they were built of wood and supported on wooden beams. This was probably the use of the fine columns, which in Mitla alone are to be found inside of the rooms. It is thought that,



By permission of [*The National Railways of Mexico.*

THE RUINS OF MITLA.

The southern subterranean corridor of the north group of ruins. The pillar is one of the few that still remain in position. These monoliths are of roughly hewn stone, and probably supported the joists of a wooden roof sloping to the two sides of the building.

erected as they are down the centre of the room, beams were placed along their tops and other beams were then put across from this centre row to each side wall.

Of the three or four halls which must have originally contained these columns, only two have them in their proper position to-day; of these, one contains six, the other but two. The columns were let into the ground to the extent of four or five feet, leaving eleven feet above the floor. They were very massive, frequently having a diameter at the base of three feet.

Probably the reason why Mitla has been favoured with such good work is due to the quality of the local stone, which is excellent for carving, being durable and yet easily worked.

The decoration on the walls consists, besides the sculpture and mosaic work, of painted designs. These are finished in red on a grey background, and, unlike the carvings, represent figures of men and animals, which are worked in with the general decorative design.

By permission of [*The National Railways of Mexico.*

THE RUINS OF MITLA.

The Hall of the Monoliths in the Palace of the Columns is so called on account of the six great pillars (of which five can be seen here) placed at intervals down the centre of the Hall. This ruin affords the most accurate details of any of the dwellings of the long since vanished Toltecs.

The ruins have suffered much in the past, for, according to Charney, who published his valuable book in 1887, the Indians removed many of the smaller stones in the belief that they would some day turn to gold. This desecration has, however, at last ceased, and to-day, besides preventing further destruction, much is being done to restore many of the temples and strengthen parts that have been broken up by earthquakes and other causes. Attention is also being paid to the further discovery of the tombs and chambers that have for centuries remained in an uncared-for state of buried silence.

The Norris Basin, Yellowstone Park.—On March 1st, 1872, the President of the United States placed his signature to a Bill that had passed the Senate and the House, for the setting apart of the Yellowstone National Park for ever for the people.

Niagara and the Yosemite Valley were already known as wonders of the North American continent, but what is now the Park had been viewed by none save a few trappers and prospectors seeking for traces of gold.

George Catlin, whose life was given to the recording by pen and painting of Indian customs and characteristics, was one of the first to conceive the idea of a national park. He desired that a large area should be set aside by the Government for the preserving of Indians and animals in their then existing state, unaltered by the attack of civilization.

Years passed, his six hundred paintings were preserved in the Smithsonian Institute, and it was not until 1872 that his desires of forty years before were realized.

(By the Photochrom Co., Ltd.)

THE GREAT FOUNTAIN GEYSER, YELLOWSTONE PARK.

This fountain, situated in the Lower Geyser Basin, is one of the most beautiful sights in the celebrated Park. A shaft of boiling water rises to a height of 150 feet, when it is dispersed in a rainbow spray.

By permission of] [*The National Railways of Mexico.*

THE RUINS OF MITLA

Two views of the principal façade of the Palace of Columns, the most complete ruin in Mitla This small town possesses the finest of any of the Toltec ruins in Mexico, and demonstrates the reason for the employment of the word "Toltec" by the Mexicans of to-day in its meaning of "a good architect

By permission of] [*The National Railways of Mexico.*

THE RUINS OF MITLA.

One of the carved antechambers of the Palace of Columns. All Toltec carving is geometrical, but nowhere is it so plentiful as at Mitla. This is probably due to the fact that here the builders found a yellowish stone, durable yet soft, and admirably adapted for working upon.

The name of the Park was derived from the literal translation of the words "Roche Jaune," or "Pierre Jaune," which was the title given by the French trappers to this district. These men probably handed down in this way the older Indian name for the place, and it is a good name too, for the stone walls of this cañon are of a vivid yellow colour. The Park is situated in the north-west corner of the State of Wyoming, on the eastern side of the Rocky Mountains.

The geysers for which the Yellowstone is peculiarly famous are here extremely numerous. Often the cones that are formed round the apertures of these springs are of the most beautiful designs, which are but inadequately described when they are compared to rocky flowers, vegetables or sponges. Many are of a mineralized silica, which is almost as hard as flint. The routine of a geyser is not without interest. At first there is a period of quiescence; then, after the temporary rest, there is a gurgle, and high into the air, perhaps to a height of two hundred and fifty feet, a column of boiling water is thrown. When the eruption again ceases, there is usually an escape of steam to take the place of the scalding fountain.

The geysers of the Yellowstone National Park divide themselves naturally into sections known as basins, such as the Norris, the Lower, and the Upper Basins, each with its attractions and fascinations for scientist and tourist alike. The Norris Basin in some ways is less interesting than the others, but is to a certain extent compensated in being one of the first sections of geysers seen by the visitor in his tour of inspection. The attention of the traveller is divided between the geysers and hot springs, whose waters, almost at the boiling-point, are coloured by the metallic suspended particles and deposited on the crater's edge in a way that renders their appearance indescribably beautiful. If this scene be at all comparable, it can only be likened to the multi-coloured tints of some rainbow as the sun's rays are split up by the mist above a great waterfall.

The Norris Basin was named after Mr. Philetus W. Norris, who was in 1877 appointed Superintendent of the Park, and who was the first to explore its wonders, although it had been discovered five years previously, in the year 1872, by Mr. E. S. Topping and Mr. Dwight Woodruff.

The greatest geyser of this formation is the "Valentine," which discharges a column of water into the air to a height of one hundred feet at intervals of about an hour. The uncertainty of the time of discharge of the "Valentine" is well atoned for by the "Constant," whose eruption takes place regularly every three minutes and lasts for ten seconds; however, in this case the water

rises to a height of only ten feet. This geyser is easily seen in the illustration, as is also the " Black Growler," a steam vent, situated close beside the roadway.

Even better known than the geysers are the hot springs in the Basin, where are the " Arsenic," the " Congress," and the " Pearl," each distinctive and with its own share of interest ; then there are the other attractions, which for the sake of distinguishing between the greater and the lesser springs must be described as " pools," such as the one illustrated, the " Devil's Inkwell," or else the " Emerald."

The Lower Basin, Yellowstone Park.—Much has been said about the wonders of the Yellowstone National Park, but there is much still to say ; for there is no place in the world so replete with interest as this huge national property of three thousand three hundred and forty-eight square miles. Amongst the chief of these wonders must be placed the Lower Geyser Basin, which includes about seven hundred known hot springs and a score of geysers, including the famous Great Fountain. Before passing to this splendid geyser, let us stop first at the Fountain, for although thrown somewhat in the shade by the imposing Great Fountain, it is of itself particularly worthy of our attention. Discharges take place every two to four hours and make a splendid spectacle, for the mingled water and steam issue out in various jets, crossing and re-crossing each other, spreading out like feathery fans in every direction and catching the light at various angles. In this way the variety and beauty of the outbursts of the Fountain Geyser have gained for it the deserved renown of being the loveliest in the Park.

But if the Fountain be the most beautiful, the Great Fountain is the most magnificent of the geysers. It is, besides, of unusual formation, for no cone or mound is found at its mouth, but only a large pool, which, when the geyser is at rest, represents a great peaceful spring. The discharge,

Photo by permission of [*The National Railways of Mexico.*

THE RUINS OF MITLA.

The masonry on the eastern side of the block of buildings at the entrance to the cruciform underground chamber. Notice the finely carved ornamentation; probably due to the excellence of the stone, which is yellowish in colour, and although soft very durable.

which rises to a height of about one hundred feet, takes place in impulses following each other in rapid succession during the duration: after which the water remains quiet for another eight to twelve hours, till the gathered strength causes another display of wondrous beauty—a great fountain, indeed, and one erected by the hand of Nature.

The Firehole, a hot spring—one of the seven hundred in the Basin—is of interest, particularly for the illusion which it contains. There appears to be a flame at the bottom of the clear water contained in the spring, and this, rising towards the surface, seems to be extinguished just before reaching the air. The peculiar effect is produced by a stream of gas issuing from the rocks at the bottom and rising to the surface.

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THE DEVIL'S INKWELL, YELLOWSTONE PARK.

One of the best known of the mineral hot springs in the Park. The sinter formations round the edges of the well take on an iridescent colouring, owing to the presence of mineral substances in the deposit of lime.

The Mammoth Paint Pots. Before leaving the Lower Basin, we must remember to point out the famous Paint Pots, or Mud Puffs; for, besides being remarkable formations, they possess a curious fascination. There are springs of various colours—pink, yellow, red, and a variety of indescribable shades. Look down into them and you see the tinctured mud puffing out into bubbles, then subsiding with a curious "ploff," and forming as it does so rings and curves which take the shape of flowers or of weird creations that baffle the imagination to find a name for them, ere they are lost again in the mud. Pattern after pattern is formed, and it is easy to forget that time is passing as one watches the convolutions in one of these Paint Pots.

Lake Superior.—Lake Superior, though remarkable in many ways, is particularly worthy of note on account of its vast size, for it can boast of the largest expanse of fresh water in the world. The supply to fill this immense reservoir is drawn from two hundred rivers, which drain an area of nearly fifty thousand square miles. The size of the lake can be better appreciated when one remembers that Ireland could be dropped into it with the greatest ease, and even then it would be an island sufficiently distant from the mainland of America to require a considerable marine service for purposes of communication with the continent. Another remarkable fact is that here the inhabitants, dwelling in the very centre of North America—as far as it is possible for man to be

Photo by] [*The Detroit Photographic Co.*

THE NORRIS GEYSER BASIN, YELLOWSTONE PARK.

Many of the geysers in this Basin are of quite recent origin. On the left-hand side is the Constant Geyser, and in the middle distance is Black Growler. The large expanse of geyserite is unsafe to walk up except along the pathway of boards.

Stereo by] [*H. C. White Co.*

GREAT FOUNTAIN GEYSER, YELLOWSTONE PARK.

The outburst of water often rises to a height of 150 feet.

distant from the sea—can welcome west-bound ships which have made their way under their own steam through the heart of a country to a township distant fifteen hundred miles from the Atlantic. This is made possible by the chain of lakes which form part of the boundary between Canada and the United States, and together constitute the greatest series of fresh water formations in the world. To this is due their collective name of the Great Lakes.

There are five altogether—Lake Ontario, Lake Erie, Lake Huron, Lake Michigan and Lake Superior, varying in size from Lake Superior, which has a surface of thirty-one thousand two hundred square miles, to Lake Erie (nine thousand nine hundred and sixty miles). Various rapids and falls occur at the junctions of some of the lakes, and to circumvent these a number of canals have been constructed, such, for instance, as that at Sault Ste. Marie—where Lake Superior empties its waters into Lake Huron—or the Welland Canal between Lakes Erie and Ontario, which was made for the purpose of avoiding the fall of three hundred feet between the two bodies of water represented by the Niagara Falls and River. The waters of four of the great lakes are forced through the narrow cañon of the river and out into the quiet Lake Ontario, where passenger and freight boats ply between the many cities which have arisen on the borders of this inland sea. The last series of locks—the Lachine Canal—bring the vessels to Montreal on the St. Lawrence River. From this point there are no further obstructions for vessels on their way to and from the Atlantic.

A great part of the traffic is connected with the transport of grain. The ships used for this purpose are termed whale-backs, and the title is by no means inappropriate, for they are built of steel plates in the shape of an elongated egg, and bear a striking resemblance to a whale without a tail.

The wheat is run into the holds of these boats from the

Stereo by] [*H. C. White Co.*

THE MAMMOTH PAINT POTS, YELLOWSTONE PARK.

The "Paint Pots" or "Mud Puffs" are a group of mud springs of different colours within a crater 40 feet in diameter.

large grain elevators, and when they are full the hatchways are closed down and the long journey is commenced.

The northern shore of Lake Superior and the north and eastern shores of Lake Huron are broken up into many hundreds of islands, varying in size from insignificant rocks to the Island of Grand Manitoulin, eighty miles long. These are becoming more and more sought after as sites for summer homes by the dwellers in many Canadian and United States cities. Particularly is this so in the eastern part of Lake Huron, which is known as Georgian Bay—now one of the most popular holiday districts in Ontario. It is only natural that on such large bodies of water as are contained in these lakes there should be storms. These are most prevalent on Lake Superior, where the waves are sometimes as great as those on the Atlantic Ocean. Fogs are also more frequently encountered on this than on the other great lakes. One of the most conspicuous points on the shores of Lake

Photo by] [*N. P. Edwards.*

LAKE SUPERIOR.

This lake can boast of the largest expanse of fresh water in the world. It is more like an inland sea, subject to violent storms and dense fogs.

Superior is Thunder Cape, which is situated to the north. It towers to a height of two thousand feet above the water, and watches like a silent giant the passing and re-passing of the wheat vessels between Fort William and Port Arthur, the two great shipping centres of the Canadian wheat trade.

Popocatepetl.—At a distance of about fourteen miles south-east of Mexico City, near the town of Amecameca, stands the volcano of Popocatepetl, one of the finest mountains in Mexico. The peak is more than seventeen thousand feet in height, and was first ascended soon after the discovery of the country. The crater is over half a mile in diameter, and has a great depth, although authorities differ as to precisely how deep it actually is. The name "Popocatepetl" means "smoking mountain," but this is scarcely correct at the present time, as smoke is seldom seen rising from the crater now, and there have been no eruptions for many years.

The lower slopes of the mountain are covered with forests, although at the crater the cone is snow-capped. Here and there the ice is divided by huge deposits of sulphur. As the snow melts much of the water runs down the inside of the crater, causing, at its base, the formation of a lake.

At the foot of the eastern side of the mountain is situated a great bed of lava, known as the "Malpoys," the bed having an area of about six square miles.

Close to Popocatepetl, and connected with it by a ridge twelve thousand feet high, is the sister mountain of Ixtaccihuatl, the height of which is slightly less than that of the volcano.

Silk Cotton Tree, Bahama Islands.—Every species of tree or shrub has its own distinctive shape and generic characteristic, but there are few which possess so striking a form as the *Ceiba*, or silk cotton tree. When once the traveller has noticed a member of this species, he is not likely to have any difficulty in recognizing other specimens of the same family. The top of the tree spreads out like a huge umbrella, and the branches often reach to over a hundred feet from the main stem. The trunk itself is of huge girth, but it is the peculiar growth of the immense roots that is the distinctive feature of the tree. These roots, diverging from the main stem long before they strike

Photo by permission of [*The National Railways of Mexico.*

POPOCATEPETL.

This volcano is the finest in Mexico, rising to a height of 17,000 feet. Its name signifies "The Smoking Mountain," although Popocatepetl has been practically quiescent for many years.

into the ground, form great buttresses and flank the tree on all sides, giving to the *Ceiba* the characteristic appearance of unassailable strength.

Many fine specimens of this tree are to be found in the Bahama Islands, but the finest and most perfect known is that at Nassau, situated behind the Post Office. It is said to have originally been brought from South Carolina, but no accurate information can be obtained as to its age; nevertheless, it must be centuries old, for a sketch of the tree made in the year 1802 might be a picture of it as it stands to-day, so little has the passing of a century affected its appearance.

Pods grow on the tree, and from these is obtained a silk-like substance, which may be used as a padding or stuffings for cushions, etc. This was the material that gave rise to the peculiar name by which the tree is known.

Totem Poles of the Indians.—North America is less noted for the ruins of bygone ages which make Europe and Asia famous; perhaps it is because the abundance of natural wonders has caused the works of men's hands to be forgotten. Mountains, valleys, gorges and rivers render the less

[*The Detroit Photographic Co.*

Photo by

CEIBA, OR SILK COTTON TREE.

This tree is situated at the back of the Post Office of Nassau in the Bahama Islands The immense buttresses formed by the roots are the distinctive feature of the tree It derives its name from the silky cotton pods it bears.

Photo by] *[Dr. R. W. Shufeldt.*

TOTEM POLES, FORT WRANGELL.

A totem amongst the Indian tribes fulfils the same office as a crest does in English custom.

obtrusive remains of Indian life unnoticed, yet in the comparatively few relics of the past there is an interest that must be acknowledged by even the most casual of observers. And here in the North tall grotesque carvings are to be found standing on the bank of some wide river miles away from any Indian habitation, a silent history-post of former revels, or power, or death.

All through the West, where forests grow and wood is available, where Indian tribes have lived and hunted and fished, we find these totem poles. Sometimes they rise to a height of fifty or sixty feet, but more often the tops are not more than twenty feet above the ground. In few cases is the colouring well preserved; sometimes only an indication of the red, yellow, blue or black is to be found, or else even this may have disappeared to leave just the bare carving, much weathered, often with the pattern scarcely discernible.

These totem poles are by no means difficult to find, for almost every city on the Pacific Coast has at least one good specimen close by. At Seattle, a fine, well-preserved totem has been placed as a pillar in one of the small parks in the heart of the city, while in Victoria, the capital of British Colombia, the Provincial Government has preserved a splendid specimen in the museum of the Parliament Buildings.

Some miles north of Vancouver up the coast is the small Indian town of Alert Bay. Here many totems may be seen, and also some that have been painted on the more modern Indian buildings. These are executed in brilliant colours that at once attract the attention of the tourist, as the boats plying between Vancouver and Prince Rupert stop at the small wharf to land supplies.

Every Indian tribe has two or more chief crests, fulfilling the same purpose as family crests in Great Britain; these chief crests are again divided into sub-crests. Totem poles which are made up of various crests are erected to mark notable events, as, for instance, on a great feast. It may be mentioned here that these feasts are often of several days', even months', duration, and are the occasion for the destruction of much property of the chief of the tribe, in order that he may prove in this manner his pretensions to wealth.

There are two portions to a totem; the upper consisting of the chief's crest, with sub-crests of his ancestors

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TOTEM AT FORT WRANGELL.

These mysterious tribal monuments of the old Hydah Indians are by no means uncommon in North America.

on his father's and mother's side. The lower portion is similar, only it contains the crest of the chief's wife, with the sub-crests of her parents.

Frequently totems consist of large tree-trunks from which the bark has been removed and the wood then carved with strange yet interesting figures. A face or an animal is most often depicted, or yet again a figure which may be said to resemble neither man nor beast, or sometimes looking like both. Usually a person will not kill or eat the animal or bird (if it be a distinct species and not an invention), that he has as his totem, though this is not a strict rule.

Projections from the tree from which the pole has been made are quite common. Sometimes there will be a long piece of wood inserted on one side to represent a nose, or else on the top may

TOTEM POLES, ALERT BAY, ALASKA.

Totemism is more than a custom; it is a creed, a moral code, by which all tribal intermarriage is regulated. Often the totems take the form of some bird or animal which is sacred to the individual or tribe to whom the totem belongs.

be fixed a great figure of some kind; but the eagle and the toad are the greatest favourites, being rendered in many sizes and colourings and styles, but seldom lifelike, recognizable, or in anything approaching correct proportions. In one case, at least, a cross-piece has been added to the top of a totem and a pair of carved toads placed one at each end. The whale is occasionally depicted, and frequently fishes.

There are four kinds of totems in use, namely, clan, family, sea and individual totems, and all of these are used by each person. The clan totem is that of, and used by, the whole clan and is the crest of the largest collection of people. This has sub-divisions known as family totems, which may be used by all members of the same family. Then there is the individual totem, which is different for the various members of a family, and is usually taken from some bird or animal. When the young Indian retires to the forest and there starves himself for many days, he decides on what

is to be his totem, and this is usually the living object (not human) that frequents his dreams most often.

There are, besides the above, two sex totems which are used respectively by men and women.

The laws of intermarriage are very strict and it is prohibited that members of the same clan should marry. With some tribes the breaking of this law has meant the paying of the penalty of death.

The complete totem of each person is thus composed of four natural objects which are used as a mark of the owner, and these are painted on canoe-paddles and other possessions. Frequently large totems are placed in front of the dwellings as a sort of name-plate, a somewhat clumsy method, perhaps, although it has the advantage of being readily seen, even at a considerable distance.

Photo copyright by] *[Underwood & Underwood.*

A TOTEM IN ALASKA.

Totems are not only used as distinctive marks of individuals or tribes; they are also erected to commemorate great feasts, or to honour the departed. This particular totem is placed over the tomb of a medicine-man, an important personage among his tribe.

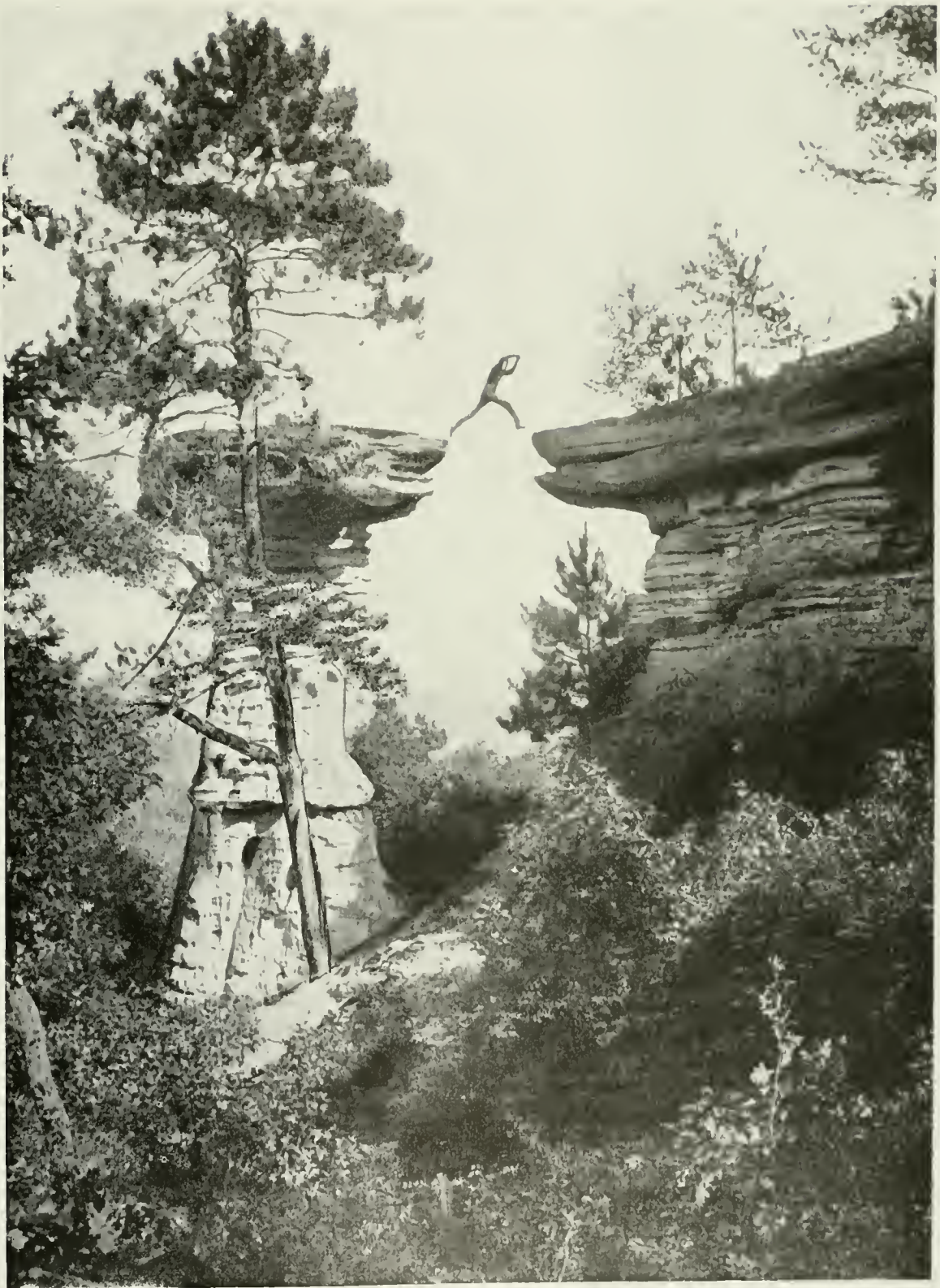
The members of a clan consider themselves very closely related, for they imagine that they have descended in some way from the animal that they use as their clan totem.

The word totem was taken originally from the Ojibway language, but it was adopted by the English and has now its particular significance throughout the whole continent, though it varies in nearly every Indian dialect.

Another use of totem poles is for burying the common people, whom it is customary to burn. The ashes of the deceased are placed in a hole that has been made in the base of the pole.

While only some tribes of Indians burn their dead, the totem yet plays an important part when the dead bodies are merely buried, for frequently the interment takes place at the foot of a totem pole, which in this way acts as a kind of tombstone.

Ornamentation by means of these grotesque carvings is not restricted to the exterior of the Indian dwellings, for in many cases, in Alaska and elsewhere, very fine totem decoration is observed. The large upright pillars which support the ends of the roofs on the inside frequently are carved with the particular crest of the occupant of the house. These ornamentations are naturally better preserved than those exposed to the fierce ravages of the elements, but the colours,



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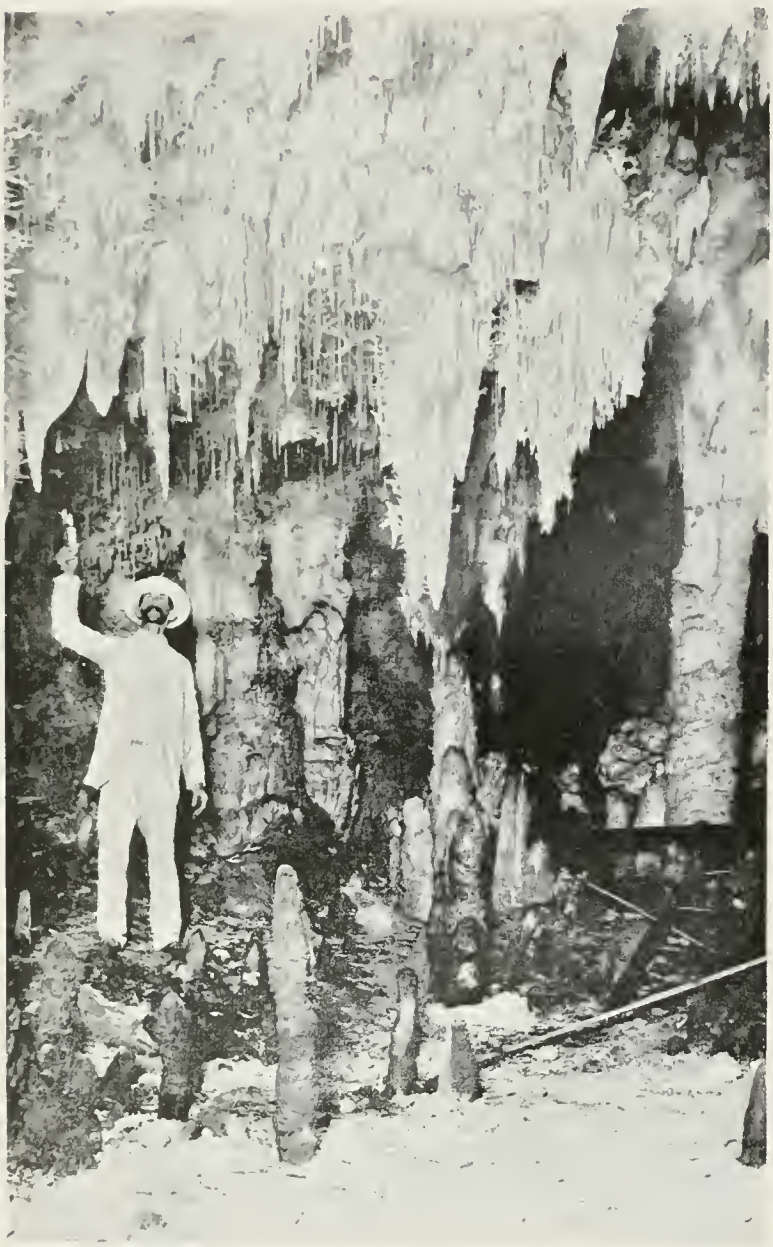
THE LEAPING CHASM, WISCONSIN

It was probably the resistless force of a glacier that chiselled out these strangely eroded rocks in the Dalles of the Wisconsin River. Although separate from the main rock at the top, the base of this curious formation is connected with the neighbouring cliff.



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THE CAVES OF BELLAMAR, CUBA.

These caves, noted for their stalactites of snowy whiteness, were discovered by a Chinaman when searching for some lost tools. They have not yet been explored to their full extent, but are known to stretch for several miles.

though consequently retaining more of their brilliance, are less visible for study than those in the outdoor sunshine.

A rather exceptional pole is found in Alaska, where a hole has been cut in its side near the top and in it inserted a carved figure of a bear with only its head and shoulders projecting; marks have been made to indicate that the bear has climbed up to its snug point of observation.

The greatest quantity and best specimens of tolem poles are found in Alaska and on the northern coast of British Colombia. Here they occur in great numbers both along the sea coast and on the banks of many of the rivers flowing into the Pacific. They are nearly always situated on the site of an Indian village or at some point with prominent geographical features, as a cañon or rapid.

In order that these relics of a primitive people may be understood and valued accordingly as historic evidence, it should be pointed out in conclusion that totemism deals in particular with rights of communication between the members of tribes, and formulates rules as to who may and who may not marry. Totemism, in fact, brings in the considerations of the laws of heredity as crudely understood by the various races. The social and religious laws introduced in totemism are best encountered and studied in connection with the Red Indians of North America and the natives of Australia, and to a certain extent in South Africa.

Leaping Chasm, Wisconsin River.—The Wisconsin River of to-day is navigable for two hundred miles, yet it is little more than a stream in comparison with its condition of existence in the remoter ages of the earth's history, when what are now the famous Dalles of the Wisconsin River formed the bed of a mighty river, and the crests of the sandstone hills that now rise abruptly out of the

surrounding level were mere islets standing out against the flood. Yet water was not the factor that scooped out this valley in the ancient plateau. The rocks themselves, scoriated and marked as they are, bear witness to the fact that the formation was due to an immense glacier. The irresistible force of these masses of packed snow broke up the rocks, carried them along, and used them as files to wear away a path in the soft sandstone. These are the causes that went to the making of the Leaping Chasm, which is a notable monument of Nature's handiwork, for, isolated as the pillar which forms one side of the chasm appears to be, it is, nevertheless, connected with the main rock at the base.

Some idea of the height is gained from a comparison of the size of the man in the picture with the total height from the valley bed to the crest of the cliff.

Bellamar Caves, Cuba.—About two and a half miles from the city of Matanzas, in Cuba, are situated the Caves of Bellamar. Their fame has spread abroad, not so much for their size—for they are small when compared with the Mammoth Caves of Kentucky—as for their great delicacy, beauty and whiteness. They are glistening white as Carrara marble. At present they have been opened to a distance of three miles, revealing halls and passages sparkling with the hanging stalactites and the stalagmites which rise from the ground, as it would seem, in an endeavour to reach them. When, sometimes, these stalactites and stalagmites meet and thicken out to form massive pillars joining roof and ground, it requires but little imagination to fancy them columns in a great cathedral crypt—the work, let us say, of some Norman artist-mason.

The largest of these halls is the Gothic Temple, which measures two hundred by seventy feet and has a great domed ceiling.

The caves extend through the white limestone to a considerable depth, as much as five hundred feet below the surface. They were discovered by a Chinaman, who, while working above with a

Photo by] [*Doubleday, Page & Co.*

THE ASPHALT LAKE, TRINIDAD.

An apparently limitless supply of pitch is to be found in this lake. The thick viscous substance gradually cools as it gets farther away from the centre lake, till at the edges it is become a hard stone-like substance.

crowbar, suddenly lost his tool in the ground, and in his search chanced upon these hidden treasure-halls of the earth.

Pitch Lake of Trinidad.—The island of Trinidad—next to Jamaica the most important in the West Indies—possesses several interesting natural objects, but the one to which most attention is turned is La Brea, the great Pitch Lake. This lake, besides being a sight for tourists, is a source of considerable revenue to the Government, who receive a royalty on all exported asphalt. Not only is the lake composed chiefly of asphalt, but the surrounding country also seems to be impregnated with it. Fortunately, this has not had a bad effect on the soil, which is extremely fertile.

The lake itself is circular in shape and about one mile across, having an approximate area of

Photo by] [*The Detroit Photographic Co.*

THE ASPHALT LAKE, TRINIDAD.

A certain tax is levied by the Government on every ton of pitch taken out of the lake, which, although it has been exploited for several years, has not sunk to any appreciable degree

one hundred acres. The centre is an almost liquid mass, bubbling and viscous, the latter increasing towards the edges, where the pitch is almost hard. The hot sun has the effect of somewhat softening the pitch, so that anything thrown on to the surface readily makes an impression. This surface is very uneven, containing many small hills where the pitch has been forced up, allowing water to collect in the channels. After pitch has been removed from the lake to a depth of about a foot, the soft, viscous mass below rises to fill the hole, and again the surface hardens.

Attempts have been made to calculate the quantity of asphalt in the lake, but no definite statement can be made on the point, as there is no certainty as to the depth to which the pitch descends. Although the industry has been carried on for some years, there is but a slight alteration in the level of the lake.

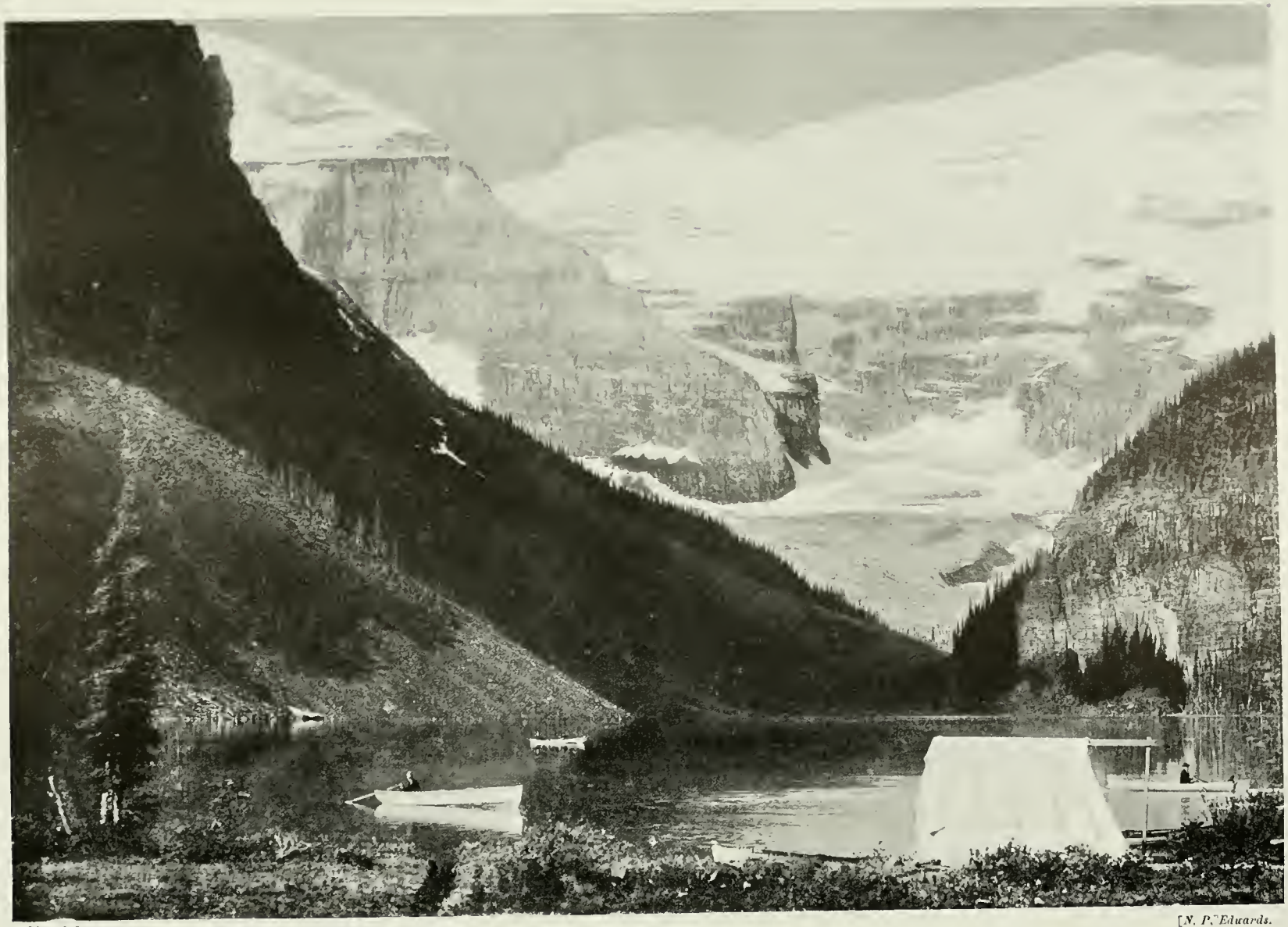


Photo by] [*N. P. Edwards.*

LAKE LOUISE, ROCKY MOUNTAINS.

This is one of the most beautiful spots in the Rocky Mountains. Thickly wooded mountain-slopes are found in close proximity to rugged escarpments and eternal snows, and all is mirrored in the smooth green waters of the lake.

Photo by [*Notman & Son.*

THE TWIN FALLS, YOHO VALLEY.

One of the most beautiful of America's falls, set in the midst of a scene of mountain grandeur Notice the deep channels worn by the river in the cliff.

There is an interesting natural phenomenon to be seen in the district near the lake. The road to La Brea has been constructed on a bed of asphalt, and the latter has commenced to move very slowly away from the lake, much in the same way as a glacier slides down a mountain.

Some authorities state that the pitch lake in Venezuela is far more extensive, since it has about ten times the area, but it is generally thought that its depth is by no means as great as that of La Brea.

Rocky Mountains.—If the great chain of mountains which extends from Alaska to Cape Horn were divided into two equal parts, we would find in the northern part, following the Pacific coast of North America, the Rocky Mountains.

These mountain ranges are the backbone, not of a country, but of a continent; they enclose world-famous valleys and rivers; their great rugged heights are fabulously rich in mineral resources, yet they are scarcely ever explored; nothing is traversed, unless, perhaps, by the explorer and prospector, but the very edges of these ranges, where the hill-slopes are clothed with forests of cedar and pine.

Nevertheless for some years railways have been gradually penetrating further into the midst of the mountains, and more wonders are being exposed to the view of the traveller. Only a decade or so back the world in general was ignorant of these hidden beauties, but now each succeeding year records some advance into these hitherto inaccessible regions.

With more than two thousand miles of mountains, the scenery is varied. In the northern extremity in Alaska there is the land of glaciers, a realm wholly under the spell of ice and snow, which, as we progress further north, develops into a country subject to arctic conditions, for the mountains terminate close to the Arctic Circle.

As if forming a natural contradiction to any thought of perpetual cold, the summer brings forth within the northern cities great beds of flowers of most brilliant colourings to vie with and even surpass the products of the more sheltered valleys of the south.

The Rocky Mountains abound with lakes, some large, some small, some high up the mountain-side, others in the valleys below. One example will show the beauties of many.

At the foot of a great glacier lies Lake Louise; and in its deep, unruffled waters are mirrored the beauties of surrounding Nature, high peaks tipped with snow, brown rocks and green pine forests blending together with the blue sky above.

As if to bring outside civilization to the very heart of this wild land of mountains, the traveller

finds that at the northern extremity of the lake a châlet has been built, and here he can gain rest and wonderment over and above sufficient for any man's desires.

This lake, which, year by year, is gaining greater fame the world over as one of the finest gems to be found in a continent noted for grandeur and loveliness, is a drive of but a few miles from the town of Laggan, in Canada. The road passes through one of the wide mountain valleys and terminates at the lake whose mysterious loveliness and magnetic fascination lie not in one, but many, fine views over the expanse of water.

Near by us is a trail up the side of a mountain. Up and up the path rises, revealing in its progress scene after scene, each one finer than the one before, and giving promise of yet another spectacle, something different, more vast and awe-inspiring, a scene beyond the limits of a man's expectations.

Coming out at last some hundreds of feet above Lake Louise, and crossing a rock-strewn path, we stand on the edge of another lake, smaller and entirely different. The trees have all vanished, and here we are confronted with what resembles a huge pool resting in a large stone basin, rather than a lake.

Turning round, the scene changes from a picture at one's very feet to a distant panorama, the reproduction of which baffles the photographer and leaves the landscape-artist to meditate on the impossibility of depicting such a view. There, some feet lower down the mountain-side, is another lake surrounded by dark green trees, and yet farther away, and hundreds of feet below this, again

Photo by] [*N. P. Edwards.*

THE EFFECTS OF AN AVALANCHE

In a land where deep masses of snow often collect above the wooded zone of the mountain side, such phenomena as this are not uncommon; but the destruction of forest life so often caused by an avalanche is appalling.

Photo by permission of [*The Grand Trunk Pacific Railway.*

MOUNT ROBSON.

A view of the mountain taken at close range.

stream meet in one great mass of wild beauty.

The general awakening of the world to the beauties of Mount Robson was soon followed by the news of its conquest by man. On August 13th, 1909, the Rev. G. R. B. Kinney, of the Alpine Club of Canada, after several previous failures, succeeded in reaching the peak of the mountain. Weather and circumstances did not permit of more than a few moments' glance at the magnificent panorama below, for the explorer and his party were almost at once surrounded by a storm. Short, however, as was the glimpse of the Fraser River eleven thousand feet below, it was one worth days of hardship and weeks of delay. There, far beneath them, were the tops of mountains, which, from the level of the railway tracks, appeared as rocky towers extending up into the very clouds. Now, looking down from the altitude of the great peak of Mount Robson, they appeared as islands in a sea of clouds, and the mists when cleared away, like a receding tide, disclosed to view more of the rocky structure below the snow-capped summits. Lake Louise is seen at its extremity; and yonder, a mere speck in the distance, is the châlet we left such a short time before.

Looking up, there appears to be a line of low white clouds in the distant heavens. A second glance reveals the fact that it is the snow-covered crest of mountains, not of some other range, but on the opposite side of this great valley, the magnitude of which was not appreciable from our low station on the shores (now far below us) of Lake Louise.

Mount Robson.—In the province of British Columbia, near the Alberta boundary, and not many miles from the source of the Fraser River, stands Mount Robson, a mountain unknown until a few years ago. For long ages it had been lost on account of its distance from civilization, but now that the steel rails of the new Grand Trunk Pacific Railway are passing right at its very base, the lovers of Nature are brought into touch with the very heart of unspoiled wonderland, where mountain, glacier, lake and

Photo by permission of [*The Grand Trunk Pacific Railway.*

MOUNT ROBSON.

A glacier on the east side. The size of the man in the foreground indicates its vastness.

Crater Lake.—Formed in the crater of an extinct volcano in the Oregon National Park is Crater Lake, one of the many beautiful and wonderful lakes to be seen in the Cascade Range.

The lake is enclosed by a steep wall of rock, the height varying from about five hundred to two thousand feet, with but few openings. It is about five miles across, and has a depth of two thousand feet. It is said to be the deepest fresh-water lake on the North American continent.

The lake itself is over six thousand feet above sea-level, and is of an ultramarine colour. Originally there was an absence of life in the water, but fish have recently been introduced. The water is quite fresh, although no inlet or outlet is perceptible.

In the centre of the lake, rising like some great cone over eight hundred feet above the level of the water, stands Wizard Island.

Coral Reefs, Bermuda.—The Coral Reefs of Bermuda are particularly interesting, on account of the fact that they are farther from the Equator than any other reefs of comparatively recent formation. The amount of coral in the Atlantic Ocean is small compared with that in the Pacific, where coral formations surround the many islands which dot that ocean.

From Stereo copyright by [*Underwood & Underwood.*

CRATER LAKE, OREGON.

This lake lies on the summit of the Cascade Mountains, and occupies the hollow caused by the sinking of an extinct volcano. It is 2,000 feet deep, and its waters are of a particularly deep clear blue.

The Bermudas consist of a large number of islands, but only nine are inhabited, the majority being but coral reefs with a small area projecting above the level of the sea. Although the formation is so rocky, there is a fertile deposit on the surface suitable for vegetation. In the poorer soil a proportion of coral sand is found.

The areas of the islands are so small that altogether they only amount to twenty square miles. They are supported by a mountain resting on the bed of the ocean, the summit of which is below the surface. The coral formation has grown around the mountain until, projecting above the surface, islands have been formed. Most of these are shaped like rings, with lagoons in the centre, the reason for this being generally attributed to the more rapid growth of the coral on the outer edge, as this is the first part to reach the surface.

The islands consist of brown coral sand and white limestone, surrounded by a living coral reef. The minute marine animals fasten themselves on to the rocks, and then absorb lime from the water. This is formed into their skeletons, on which, in turn, others fasten and die. In this way the islands of the Bermuda have slowly come into being in the Atlantic Ocean.

The Pyramid of the Sun.—The ruins of a mighty city are situated thirty miles north of the City of Mexico, on the Vera Cruz Railway. They are all that is left of Teotihuacan, one of the chief centres of Toltec or pre-Aztec civilization.

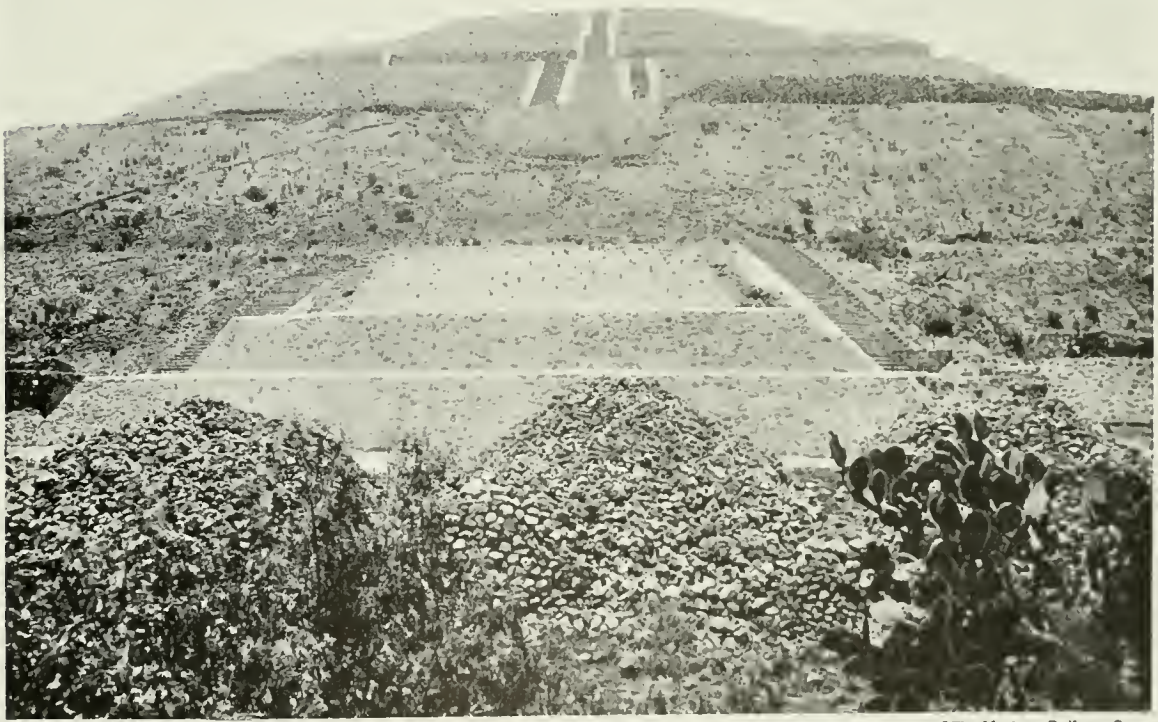
Various conjectures have been made as to the date of its foundation, some ascribing it to the time of the Totonacs, others to that of the fourth of the nine mysterious kings of the Toltecs. The foundations of this ancient city have a circumference of twenty miles, and the two chief temples of the place, the Pyramids dedicated to the worship of Tonatiuh and Metztli, the Sun and the Moon, are still extant. The greater of these temples is that of the Sun, which stands on a base six hundred and eighty-two feet square. It is in the form of a truncated pyramid, reaching to a height of one hundred and eighty feet, and is supposed originally to have been surmounted with a colossal stone statue of the Sun-God, whose breast was covered with a plaque of polished gold. This gold breastplate was intended to catch the first rays of the rising sun, so that the figure should shine out in awe-inspiring splendour, a worthy representation of the great Tonatiuh.

Photo by] [*Rau.*

THE CORAL ROCK FORMATIONS, BERMUDA.

The whole of this group of islands may be said to be composed of coral. The rocks are chiefly of the "organ-pipe" variety, one single "stem" of which is the result of the life-work of many scores of animalculae.

The Pyramid of the Moon is somewhat smaller, and is connected with that of the Sun by the "Path of the Dead." On either hand of this route, strewn thickly over the plain for an area of about nine square miles, are the tumuli of the departed; this, perhaps, was the reason for the naming of the street the "Path of the Dead," although it is not improbable that the name was derived from the circumstance that here was the road for all religious processions. The religion of these people was barbarous in the extreme; life was of little price, and thousands of victims were slaughtered annually to their rapacious gods. The processions, therefore, invariably consisted chiefly of unhappy victims doomed to an inhuman sacrifice, and to these, indeed, as well as to those who witnessed the progress, this road was a "Path of the Dead."



Photos by permission of] *[The Mexican Railway Co.*

THE PYRAMID OF THE SUN.

This splendid monument of the Toltec occupation of Mexico was erected at Teotihuacan for the worship of the Sun. On its summit was a stone figure of the deity with a golden breast-plate, intended to catch the first rays of the morning sun. Like every Toltec temple, it was the scene of much human sacrifice.

By the word "pyramid," the reader must not be misled into thinking that the formation was similar to the better-known structures of ancient Egypt. Rather, these temples were a series of square terraces, one on the top of the other, gradually diminishing in size, as the accompanying illustration clearly shows. A series of steps in the centre led from terrace to terrace until the final pyramid was reached. Here were the stone figures of the gods and the horrible humped stone of sacrifice. It was up these steps that the victim was led, sumptuously arrayed, garlanded, and attended by a noble retinue. On the humped stone he was stretched, with his bosom bared for the priest. In an instant the sacrificial knife ripped out the heart, which, bleeding and palpitating, was offered as a peace-offering to the god. The body of the victim was then hurried away to be eaten, and as these poor unfortunates were generally prisoners of war, it was the captor who claimed the spoil.

But all that is known of these early monuments in Mexico is slight and uncertain. Of accurate history there is scarcely a record, and conjecture has to fill up the blanks in this "ancient tale." The result is that there are many unsolved puzzles in Teotihuacan; for instance, the whole of the

Photo by permission of [*The Sphere.*

A TYPICAL ICEBERG OFF THE LABRADOR COAST.

space within the borders of the city was overlaid with three successive layers of concrete floors, for what reason it is impossible to say; again, myriads of tiny clay heads, some of which are clearly imitations of the prevailing types of natives, have been turned up by the plough. The use and significance of these little figures have never been ascertained. Let us hope that before long a discovery may be made which will give us a clue to the meaning of these mysteries.

Icebergs of the Arctic Ocean.—The iceberg of the Arctic Ocean is indeed a wonder, and one that can rank with the very few natural objects that are untouched by the hand of man, and unspoiled by any attempt to beautify. In its journey southward from the cold waters of the Arctic seas down to the oceans warmed beneath a tropical sun, it undergoes a process of constant change; pieces break off and the warmer waters and air cause it to diminish and grow feeble, until at last it dies away, returning to its original state of limpid water, from which perhaps it will some day be again transformed to the marble-like beauty of an iceberg and float a cathedral of whitest pinnacles and towers on the dark waters of mid-ocean. It is impossible to say of an iceberg what is often said by the traveller of the temples and cathedrals that are made with hands: "I shall visit it again, and in a fuller manner study its beauties;" for no anchor chains it to its place, it has the

Photo by permission of] [*The Sphere.*

AN ICEBERG NEAR ST JOHN

Photo by permission of] [*The Sphere.*

AN ICEBERG OFF FRANCIS STRAIT, LABRADOR

whole sea in which to roam. But there is no difficulty in saying *where* these ever-changing icebergs will be found, if visited in the right season. A trip across the Atlantic in certain months will most likely reward the traveller with at least a glimpse of some magnificent icebergs when off the Newfoundland and Labrador coasts. Sometimes they resemble a seal resting on a mass of rock, and at other times a great white bird with extending wings; or yet again, an arch or massive gateway, a castle with polished walls and towers.

These bergs are, to the passer-by, beautiful, but to the thoughtful man they reveal a special wonder as he considers that only a fraction of the ice is above water, and that down below the surface is a block, a veritable foundation for the structure that is apparent.

In winter, along the coast of Labrador, are found great floating icefields, brought down from

Photo by permission of] [*The Sphere.*

A LARGE BERG OFF THE NEWFOUNDLAND COAST.

Large as the berg appears above water, it must be remembered that four times its apparent mass is hidden beneath the waves.

the north, while in the summer much of the coast is blocked with icebergs of vast size and great beauty. There are gaps between these which allow the fishing vessels to pass in and out of the numerous harbours along the coast.

Ice Grottos.—Amongst the many beautiful formations of ice, mention must be made of the ice grottos. These are formed by great masses of packed snow, often at the foot of a glacier. But it is not so much the formation that is marvellous as the effect of light that an ice-cavern produces. Anyone who has entered one of these grottos has received an impression he is never likely to forget. For there is nothing comparable to the blue light that fills the caves. It is unearthly in its depth and brilliancy. Sometimes it gives place to the vivid green of the cat's-eye; but always it is dazzling and bewildering, and when the traveller emerges once again into the white light of day he feels that he has just passed out of the ante-chambers of the skies.

Niagara Falls.—Long regarded as one of the wonders of the modern world, Niagara Falls has lost none of its charm and supremacy in public estimation as the years have progressed. It is more popular to-day than ever, and its number of visitors, both on the American and the Canadian sides, is constantly increasing, many of whom come embued with the spirit expressed by Nathaniel Hawthorne :

" Niagara is a wonder of the world, and not the less wonderful because time and thought must be employed in comprehending it. Casting aside all preconceived notions, and preparation to be dire struck or delighted, the beholder must stand beside it in the simplicity of his heart, suffering the mighty scene to work its own impression. Night after night, I dreamed of it, and was gladdened every morning by the consciousness of a growing capacity to enjoy it."

The fact that geologists and other scientists have written learned monographs of not scores, but hundreds, of pages to account for the present condition of the Falls should deter the reader from expecting too detailed an answer to all the questions he might like to ask, or that will occur to him. One of the most careful writers has thus succinctly stated the main proposition, however, which gives reasonably satisfactory explanations :

When even Time was young, a mighty ice-cap, mountains thick, covered the northern part of the continent. In melting along its southern edge, it formed the body of water which has since separated itself into the system of great lakes now known as Ontario, Erie, Huron and Michigan. The flood of waters sought outlets—naturally toward the south—and found them, first through the Mississippi Valley and then through the lowlands of the Mohawk. Later, as the ice-caps farther north melted, the rushing torrent made a path St. Lawrence way. When the ice had finally disappeared and the various lakes had reached their level, Ontario was many feet below Lake Erie, and the two were separated by a great watershed. As the lakes must have a sufficient outlet, the waters wore through the upper part of the barrier and plunged over the watershed forming what is now the Falls and the Niagara River.

But all this was centuries ago, and wise men tell us that the river made its first great leap at a point about where we find Lewiston and Queenston. Time and the swirling waters have worn away the rocks back to the present location of the cataract. This wearing away process has done curious things, and many and varied are the theories. One supposition is that in its rush the river encountered many islands. Earthy ones could not withstand the force and gradually disappeared, while rocky ledges held their own.

An illustration shows a natural tunnel bored by the waters of the

By permission of] [*The Ontario Government.*

TUNNEL IN A ROCK BORED BY THE NIAGARA RIVER

This bore is situated twelve miles below the present site of the Falls, and clearly proves that the cataract is gradually wearing a path through the rocky plateau of its higher level.

Niagara and twelve miles below the present location of the Falls, clearly showing the retrogression that has taken place.

It is reasonable to believe that there was once an island similar to Goat Island at the " parting of the ways "—the whirlpool rapids on one side, and on the other the deep ravine which scientists say was the old bed of the river. The theory is that this island was made up partly of soft material and partly of a great shaft of limestone. In time the former was washed away, and after a while the rocky backbone toppled over, blocking the path of the waters, sending them down the right-hand way and thus abandoning the original course. The turbulent stream, meeting with the rocky barrier, was thrown back on one side and whirled about, completely washing out the yielding material which has left the huge basin of limestone where the left-hand current goes round and round and forms the great cauldron which we call the Whirlpool. After a time this struggling part of the stream finds a way out of the maelstrom, joins the right-hand current and leaps and plunges

Photo by permission of] [*The Sphere.*

NIAGARA BY NIGHT.

This photograph shows the wonderful effect obtained by the illumination of the Falls by night.

along. It is also supposed that the stream carried on much of the débris, and finding another rocky ledge on the left, deposited there the shale-like material, making the point of lowlands called Foster's Flats, which is a short distance below the Whirlpool. Here the river found a course with greater difficulty, but the mad waves have succeeded in dashing through the Gorge, the narrowest part of the seven-mile path which Niagara has taken thirty-five thousand years to wear away. Gradually the bed widens and the pent-up torrents leap as highly and plunge as deeply, but withal more joyously, until broadening out at Lewiston on the right and Queenston on the left, they present a calm surface whose little eddies look like dimples in a smiling face.

But it is not with the history of the Niagara region that these pages must principally deal. The scenic features are those that attract our attention. He who sees Niagara from one view-point must not think he has thereby exhausted the scene. Nay, he has but begun what should be a perpetual delight. Naturally there are certain specific places from which the photographs have been taken that have familiarized the world with definite views of the great cataract, but these should be considered as but starting-points for personal explorations which shall discover new, startling, delightful and

Photo by] [*The Detroit Photographic Co.*

NIAGARA.—THE AMERICAN FALLS

It is probable that some French trappers and traders were the first Europeans to see these Falls; but the earliest record of their magnificence was written by Father Galinee, a Jesuit priest who visited them about the year 1669

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THE KING OF ICICLES, NIAGARA.

One of the immense icicles that hang over the rocky ledge of the Niagara cliff

thrilling aspects. The view from Prospect Park is entirely different from that of the Canadian side. Goat Island divides the Falls into two great divisions —the Horseshoe Falls and the American Falls. The former is by far the more majestic, grand and scenic. The curve of the rock over which the water descends gives a charm to it that is lost in the simpler and more uniform flow of the American Fall. Yet if one could see but the latter he would go away overwhelmed with the conception of its tremendous beauty.

The bridge from the mainland to Goat Island affords one the opportunity of standing close to the lip, or edge, of the Fall in a variety of places, and there the stun and roar of it almost overwhelm the senses.

But to the generality of people, however, the most thrilling experience is to ride in the tiny steamer, *The Maid of the Mist*, and come close to the boiling waters at the foot of the Fall. The passengers are taken aboard on both sides of the river, and then the brave little steamer, bobbing up and down like a cork, now and again swathed in mist and spray made brilliantly opalescent by the rays of the sun, ploughs her way through the seething and pouring waters towards the Falls. The ears are deafened and the senses awed into forgetfulness of everything else by the powerful majesty of it all, and the human mind is, indeed, insensible to outward impressions if it can experience this trip without deep emotion.

It is in winter, however, when the wizardry of the touches of King Frost is seen on every hand that one appreciates anew the powers of Nature to produce the delicate and beautiful.

Imagine, if you can, the most delicate twigs, shrubs, bushes and great trees, big rocks and shapely railings, all hewn from purest marble. Conceive of the beauty and whiteness, and finish them with the most clever touches that a hand more skilled than man's is able to give to them. Picture this all in reality; and, over all, the smothered roar of the cataract, as though angered at the apparent effort of winter's grasp to make it prisoner. Each day the superb whiteness is renewed in all its purity, and thus, while it lasts, the spectacle is one of dazzling beauty. In fact, Niagara in winter is fairyland's very self.

In time there comes down from Lake Erie a tremendous floe of ice. It covers the Upper Niagara,

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HORSESHOE FALLS, NIAGARA

These form the most majestic rush of waters of any part of the Falls.

from the Falls to the lake, and, plunging over the precipice into the gorge, lodges in the eddies close by, soon forming a bridge over the rapid-running stream with its small pieces of ice. These pieces are caught in a jam by the rushing waters, and before many hours venturesome humanity is speeding across it from shore to shore, from country to country. The Niagara ice-bridge is a mystifying structure, and it is difficult to understand how tiny particles of ice can form a bridge of such wonderful strength over a roaring river like the Niagara. The bridges are not formed by the stream freezing over, but rather by the ice flakes that are tossed up in the air and then held in suspension on the surface of the river, which rushes along at its customary flow below. Deep crevices form in the bridge, each one revealing the marvellous creation of the mass, for one may look far down into them and not see any water. But as one walks to and fro he soon discovers why this ice mass is called a bridge. It really is a bridge, for at the foot of the Falls the water is seen boiling, bubbling, seething, roaring, as it dashes underneath where the sightseer stands. Then a quarter of a mile down the gorge the water emerges again from under the ice-bridge in great swirls and pools, bringing blocks of ice along, which it dashes down towards the rapids and whirlpools below. When it is evident that the ice-bridge is substantial, many rough wooden shanties are erected on its surface, between the two shores, and the view of the Falls of Niagara from the centre of this ice-bridge is one never to be forgotten. It is beyond description !

Photo by] [*H. N. King.*

NIAGARA THE HORSESHOE FALLS IN WINTER.

For many weeks a wide stretch of these Falls is frozen over, and myriads of icicles hang over the precipice. Day after day the glacial beauty of the congealed spray covers rock and tree, and this white silence is broken only by the smothered roar of the cataract.

No fairy-tale ever described more exquisite and delicate beauty. The spray fills the air, as in summer, but is immediately crystallized into ice on twigs, limbs and tree-trunks, until they seem to be living things made of ice. When the sun shines they become trees of diamonds, opals, garnets, gems of every colour, tint and shade, shot with living fire that dances and scintillates as the wind makes the branches move. Rainbows are scattered here and there, as if in a tangled heap, and all the colours of flowers, sunrises and sunsets are mingled and interwoven in rich and glowing splendour. The trees give forth strange and peculiar sounds, sometimes cracking like the firing of pistols, again squeaking, creaking and scraping as the ice is rubbed by the movements caused by the wind.

Icicles form on every hand, and some of these are a hundred or more feet high. The " king of the icicles " is the one that forms where the rocks overhang and there is a large space between the rock above and the floor beneath. It is of a unique and strange style of architecture never dreamed of by man ; fretted, ribbed, tooled, embossed, with offshoots, long and short, pointed and stubby, pure white, creamy yellow, or water crystal, but all uniting to make that one fantastic and peculiar Moorish, Persian, Arabian and Gothic pillar, plus elements foreign and strange to all these styles, and yet harmonizing in the one vivid, bizarre and beautiful column that Nature offers as a sample of her individualistic powers.

How the snow and icicles change their appearance ! Here and there the black of a tree-trunk still exposed gives vivid contrast, and the blue, green and black water, ever pouring, ever moving towards the lip of the Falls, with its rising spray, adds living charm to the picture.

Perhaps the most wonderful view of all the Falls afford is to see it from the rear in the Cave of the Winds. To enter this cave, one crosses to Goat Island to the dressing-house, where one exchanges his ordinary clothing for a special suit. Then, in company with a guide, he circles down the cliff by a small, winding staircase, occasionally losing his breath as the spray dashes over him, until he emerges upon a ledge of rock, with the dark green waters of the river below and a vertical

Photo by] *[The Detroit Photographic Co.*

THE WHIRLPOOL RAPIDS, NIAGARA.

A hard shaft of limestone has turned the flow of the river from its straight course, and has caused the swirling waters, as they flow downwards, to curve out a sharp bend to the right.

Photo by] [*The Detroit Photographic Co*

THE HORSESHOE FALLS, NIAGARA.

This photograph of these tremendous Falls is taken from the foot of the Stairway.

Photo by] [*Underwood & Underwood.*

THE PETRIFIED FOREST OF ARIZONA.

Over ten square miles of country is covered with these fallen trees and stumps, which, in the course of ages of petrifaction, have become solid masses of stone.

wall of granite towering above. Another score of steps brings him in front of the sheet of water which curtains the cave. It is about one hundred and fifty feet in height, and as much in breadth, and descends between Goat and Luna Islands. It is well that the new-comer generally is in ignorance as to the sensations he will experience as he enters the cave. Standing there and looking in, he observes a patch of blue sky at the further side, and all the space between is one mass of criss-crossing blasts of sleet, shooting like frightened comets hither and thither, as if in wild terror. Taking a few steps forward, the battery of the Fall seems to have descended upon his head—yet it is merely a few drops, comparatively speaking—and for some moments Terror grips the throat. Then Beauty asserts her power to charm, in spite of discomfort and fear; for immediately around his feet rainbows form—one, a great circle, through which he descends to the rocks beneath. Everything seems black and forbidding. The rocks are slippery, and he clings desperately with hands and toes wherever he can. Half blinded, quite deafened, gasping for breath, he wishes he hadn't come; and then all at once the curving inner surface of the falling water attracts the eye, the sun making it half translucent and filling it with fire and shifting rainbow-colours. Ah! how grand, and at the same time how beautiful! Now he looks around and sees the black-terraced rocks, bathed in sleet, of which the cave is formed. Then, as full courage returns, he walks fearlessly to the Fall, even into the water itself, for there is no danger of being "sucked in," the rebound driving him the other way. Here are sensations and emotions never dreamed of before. The deluge is occurring before his eyes and he is a fascinated prisoner.

The real delight of this trip, however, is experienced on leaving the Cave on the rocks in front of the Falls. Here are rainbows, half rainbows, quarter rainbows, literally at your fingers' ends, "around your head, bathing your feet, and the pot of gold has become a cauldron of molten silver, foaming and rushing about your knees, and tugging at you with an invitation that is irresistible."

THE FALLS OF NIAGARA IN WINTER.

The Horseshoe Falls as they appear from the Canadian side when winter has frozen to silence its mighty rush of waters, and transformed the spray to a myriad of crystals on rock and tree

By far the best way to see the river below, the Gorge and the Whirlpool with its Rapids, is to take the round trip ride on the electric railway. It is a two hours' trip, every moment of which is full of interest and fascination. The rapids above the Upper Whirlpool are the chief feature of the lower Niagara. They are far wilder, more turbulent, more dominating than those above the Falls. Take a stop-over from the car and descend to the rocks overlooking the seething, boiling mass, and sit down. As you watch the leaping tongues of white-lipped water soaring high into the air, you will recall those lines of Matthew Arnold:

"Now the wild white horses play
Champ and chafe and toss the spray."

Then suddenly the roar and rage ceases as the waters enter the Whirlpool. Here is a calmness, a dignity, a solemnity that awes the beholder. The excitement of the Rapids is gone. This brings a sense of stately restfulness over the feelings, just as one might experience in suddenly leaving a mercurial Spanish dancer, leaping high in air and striking her castanets or tambourine, and being ushered into the presence of a tragedy queen. The whole river is caught in a circular trap of massive rock. It is a circle without an outlet. Yet it is no seething maelstrom of maddened waters, furiously raging at their confinement. No! it is as if the great prisoner had calmly accepted his imprisonment and deliberately settled down with kingly dignity to circle his allotted treadmill task. How strong it is; how majestic; how fascinating; how suggestive! To me the Whirlpool is the outward manifestation of the steady, calm, resistless power within the soul of a strong man that keeps him at a thankless task because it should and must be done.

From Stereo copyright by [*Underwood & Underwood.*

LOOKING ACROSS A DESERT OF THE PETRIFIED FOREST OF ARIZONA

Hundreds of thousands of these remains of trees are scattered over this desert, which is composed of sand, clay, and volcanic ash. Certain portions of the trees have changed in the course of mineralization to chalcedony and agate and onyx.

Photo by] [*The Detroit Photographic Co.*

THE BRIDGE, PETRIFIED FOREST, ARIZONA.

This tree-trunk lies across a canyon and is the completest fossil in the forest, measuring 111 feet. It should be observed that it has no branches, and this peculiarity, noticeable in all the remains, has given rise to much speculation amongst scientists.

From every standpoint—scenic, geologic, scientific—Niagara is interesting and alluring, and no traveller can be deemed "educated" until he has beheld it, studied it, and in a greater or less degree, come under its spell.

The Petrified Forest of Arizona.—The Petrified Forest is certainly one of the "wonders of the world." It is an area over ten miles square, covered with fallen trees, generally broken into somewhat irregular lengths, scattered in all conceivable positions, and in fragments of all sizes, the sections varying from two to twenty feet long, and in some places piled up and looking almost like a lot of children's cart-wheels jumbled up together.

This Petrified Forest area is about twenty miles from Holbrook, Apache County, Arizona, and while it is all one area, it is naturally subdivided into five parts, commonly known as the "Petrified Forest," "Chalcedony Park" and "Lithodendron (stone trees) Valley," the Blue Forest and North Sigillaria Forest. The further we go, the greater the quantity of specimens found, until at last we are surrounded literally by millions of pieces. Some of the fossil trees are well preserved, and of these the exposed part will measure as much as from one hundred and fifty to two hundred feet in length and from two to four and a half feet in diameter. The roots of some are fully exposed, and the diameter of these portions is not less than ten or twelve feet.

On the other side of one of the slopes we come to the interesting Petrified Bridge. This consists of a great petrified tree-trunk lying across a canyon and forming a natural foot-bridge on which men may easily cross. I have ridden across it on horseback. This bridge is on the north-east side of one of the "mesas" near its rim. The trunk is in an excellent state of preservation, and is complete to the base, where it is partially covered, though it shows clearly the manner in which the roots were attached while the tree was still growing. The total length of the tree that is

Photo by] *[The Detroit Photographic Co.*

THE PETRIFIED FOREST, ARIZONA.

Geologists are unable to determine the causes which led to the petrifaction of this forest. It has been supposed that a great tornado swept away a vast number of trees and deposited them where they are found to-day. Here, in the course of ages, their wood fibres became charged with mineral deposits and were finally turned to fossil.

Photo by] [*C. C. Pierce & Co.*

THE EAGLE'S HEAD, PETRIFIED FOREST.

One of the strange formations to be found in the "petrified" area of Arizona. It is due in all probability to the volcanic disturbances that at one time must have prevailed in this region.

exposed is one hundred and eleven feet, and as the canyon across which it lies measures, at this point, exactly forty-four feet between the points on which the tree rests, more than sixty feet of the upper part of the tree lies out upon the left bank of the canyon. At about the middle of the canyon the tree measures ten feet in circumference, giving a diameter of about three feet. Its diameter at the base is about four feet, and at the extreme summit is reduced to about eighteen inches. It is possible that the tree when growing measured one hundred and seventy-five feet or two hundred feet in height.

As the accompanying photograph shows, most of the trees have been split across into sections or blocks. There are four of these transverse cracks in the tree of the Petrified Bridge.

A great many scientific and other writers have stated that there are a number of stumps to be found standing erect, with their roots in the ground, showing that they were growing and were buried and petrified on the spot. But those who, like myself, have rambled over these forest areas many times during the past thirty years know that there is not found a single tree-stump so situated.

There are several theories propounded as to how this Petrified Forest came into existence, but this is the theory which alone seems satisfactory :

Many, many millions of years ago, in the far-away dim ages of what geologists call Triassic and Mesozoic times, these trees grew, just as trees grow in our forests to-day. Evidently the climatic conditions were such in those far-away early days as to be highly suitable for tree growth, or these great trees could never have attained the height and size in which we find them. Those were the days in which the world was in the process of making, and earthquakes, uplifts, and subsidences of the earth's surface were much more common than they are now, since the crust of the earth has become more stable. In some convulsion of Nature—possibly a great tornado or flood—the whole forest-area where these trees grew was flooded to such an extent and for so long a period of time that the roots of the trees rotted and allowed the trees to fall, or else the flood was so tremendous in force that it washed away the earth around the tree-roots and tore up the trees themselves, floating them away from the place where they grew to this region where we now find them. The reason we assume they were thus carried away from the place where they originally grew is the

fact that most careful searching has failed to find few, if any, branches of the trees, and but very few of the cones that they used to bear. It is assumed, therefore, that the branches were broken off by the turbulent movements of the flood, and that when the damming up of the course of the stream occurred, which located the trees where we now find them, the lighter branches and cones were carried away on the surface of the swirling waters.

It seems very probable that all the trees, lodged in a place where they could not escape, were submerged in water for many centuries. The land surrounding the area of submergence undoubtedly contained many minerals, and as these were exposed to the atmosphere and disintegrated and rusted, they coloured the water in which the trees were lying. It is well known that iron rust is a deep red; copper gives brilliant yellows and purples, while other minerals give equally vivid and beautiful colours. Combined with the colour-giving minerals was a good deal of silica, or lime, also held in solution in the water. By the exercise of that wonderful law, called capillary attraction, the wood fibre, as it decayed and washed away, left place for the water charged with lime and the brilliant colouring matters. Day by day, week by week, month by month, year by year, century by century, the process of change from wood fibre to solid stone, beautifully coloured, was going on, until all the wood fibre was gone and nothing but stone left in its place.

In the meantime, there were great volcanic disturbances in this region, and vast quantities of volcanic ash were cast out over the whole area of this forest, until finally the trees were buried in it many feet deep. Then, as more millions of years slowly wore away, the region sank, until sandstones, limestones, more sandstones and more limestones, were washed

Photo by] [*The Keystone View Co.*

LA SOUFRIÈRE, GUADELOUPE.

A view of La Soufrière when looking down 2,000 feet into its crater. This volcano is situated on Basse Terre, the western side of the island, and rises to a height of 5,497 feet. It derives its name of "The Sulphur Mine" from its pungent sulphur fumes.

over the area, and the forest was buried, some scientists say, to a depth of over twenty thousand feet.

Then this period of subsidence was arrested and reversed. Mother Nature now began to lift the area again out of the great inland sea where all these layers of sandstone and limestone had slowly been accumulated and deposited, and the Petrified Forest region began to emerge higher and higher. But this must have been a time of great storms and atmospheric conflicts, for little by little these sandstones and limestones that had so slowly and patiently accumulated were disintegrated and carried away, probably to form the sands of the Mohave and Colorado deserts of Southern California. Finally, previous to our own historic age, this process of disintegration and washing away of the accumulated strata of the Petrified Forest region was arrested, just at the exact time required to leave these trees exposed to man's vision.

Photo by] *[The Keystone View Co.*

JUANACATLAN FALLS, MEXICO.

These Falls, on the Lerma River, are 70 feet high and 600 feet wide. The waters come direct from Lake Chapala and tumble over the lip of the precipice in such grand confusion that they have been termed "The Niagara Falls of Mexico."

The Crater of La Soufrière, St. Vincent, British West Indies. — No picture can possibly do more than give the faintest conception of the interior of a volcano. It would require a moving picture, with native colours, to even suggest with adequate fidelity that which arrests the eye, almost paralyses the mind, and entirely awes the soul of a man when for the first time he gazes into the depths of an active volcano.

One of the great craters of the world is that of "La Soufrière"—the "Sulphur Mine"—on Saint Vincent, one of the islands of the British West Indies. This island is one of the Lesser Antilles, in the colony of the Windward Islands, and is about twenty-five miles south of St. Lucia. Though it is only seventeen miles long and ten miles broad, with an area of one hundred and thirty-two square miles, the volcano is the summit (at about four thousand and fifty feet elevation) of a lofty ridge that reaches from north to south.

The island itself is highly productive, the soil being rich and easily worked; sugar, rum, molasses, arrowroot, cacao and spices being the chief products.

The crater of La Soufrière has many times been in eruption, notably in 1718, 1812, 1814, 1880, and May, 1902. The population of the island was estimated, just prior to the 1902 eruption, to be about forty-five thousand, of whom at least sixteen hundred lost their lives in that dread outburst, when Mont Pelée erupted and slew thirty thousand people at the same time, completely wiping out of existence the town of St. Pierre. Though Pelée was far more destructive to human life than La Soufrière, the latter, as a volcano, was immeasurably more interesting, and also much larger. Dr. Jagger, who made the ascent of both craters, declared that it was twice the size of Pelée, and that the eruption was "phenomenally much more violent than the eruption of Mont Pelée." The reason less lives were lost was owing to the fact that there was no populous city at

Photo by] [*C. C. Pierce & Co.*

THE CATACOMBS OF GUANAJUATO, MEXICO.

The dry rarefied air of this district possesses such fine aseptic qualities that flesh does not decay, but simply dries up and finally crumbles to dust, and so makes possible this gruesome form of burial.

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THE CATACOMBS OF GUANAJUATO.

As long as a yearly fee is paid the bodies of the dead are numbered and registered and cared for in this way; but if payment is discontinued the bodies are cast on a heap of bones and skulls.

the base of La Soufrière as there was at Pelée. When Mont Pelée first showed signs of activity the people were unable to flee, but on the St. Vincent island the people were able to escape; yet even then sixteen hundred poor wretches perished in the lava and hot blasts that poured their death-dealing air over the region.

There are two craters at La Soufrière, the "old" crater, the scene of the 1902 eruption, which at that time had a diameter of four thousand one hundred feet, and the "new" crater, to the north-west, which was opened in 1812.

It is a terrible experience to enter the heart of an active crater, and, of course, one perils his life in so doing. Yet human beings are daring and adventurous even to the gates of death, and many vivid accounts have been given of the activity of craters by those who have thus happened to witness their demoniac ebullitions.

The following is a description by Mr. George Kennan of the clouds and explosions of Mont Pelée, at the time La Soufrière was in active eruption. Doubtless the description of the one fully answers for the other: "The morning of May 8 (1902) dawned clear; but a column of vapour was rising to a great height above the main crater of Pelée, and ashes were falling all along the line of the coast from St. Pierre to Prêcheur. An occasional detonation could be heard in the direction of the mountain, but there was no other sign of forewarning of the impending catastrophe. About eight o'clock, with a rending, roaring sound, a great cloud of black smoke appeared suddenly on the south-western face of the volcano near its summit, and rushed swiftly down in the direction of St. Pierre as if it were smoke from the discharge of a colossal piece of artillery. There was no sharp, thunderous explosion when the cloud appeared, nor was it preceded or followed by an outburst of flame: but as it rolled like a great torrent of black fog down the mountain slope there was a continuous roar of half-blended staccato beats of varying intensity, something like the throbbing, pulsating roar of a Gatling-gun battery going into action. The time occupied by the descent of this volcanic tornado-cloud was estimated as not more than two or three minutes; and, if so, it moved with a velocity of between ninety and a hundred and forty miles an hour. It struck the western end of Mount Parnasse about half a mile from the place where my friend was standing; swept directly over St. Pierre, wrecking and setting fire to the buildings as it passed, and then went diagonally out to sea, scorching the cocoanut palms and touching with an invisible torch a few inflammable houses at the extreme northern end of the village of Carbet."

The Juanacatlan Falls, Mexico.—As one travels from El Paso to the City of Mexico he should not fail, when at the city of Guadalajara (pronounced Wah-da-la-ha-ra) to go out to El Castillo,

some twenty-five miles, and then take the car to the Juanacatlan (pronounced Wah-na-cat-lan) Falls, which are commonly termed the "Niagara Falls of Mexico." They are on the Lerma river, and are seventy feet high and six hundred feet wide. It will thus be seen that in their dimensions they are lesser than Niagara; nor do they possess so varied and picturesque features, either in the Falls themselves or in their environment. The waters are clear, fresh, pure and sparkling, direct from Lake Chapala, and they come with great rush and roar down the river, here dotted into picturesqueness with several small, though well-wooded islands. The Falls are made more interesting by the irregularity of the lip of the precipice over which the waters tumble into the seething pool beneath. Some portions of the rock rise above the water; others jut out beyond the Falls; still others are hidden a little below the edge, so that the flood falling upon them is dispersed in foamy spray and mist to add a new and charming effect to the scene. The actual Falls are more beautiful though not as majestic as Niagara. But there are no great whirlpools and no rapids below, such as give dignity and awe to the American falls.

Gallery of the Dead. Catacombs of Guanajuato, Mexico.—One of the most grotesque, quaint, old and fascinating towns of Mexico is Guanajuato, pronounced "Whan-a-wha-to," near the line of the Mexican Central Railway and within a day's journey (two hundred and thirty-eight miles) of the City of Mexico.

The churches and paintings of this city have made it world-famous, but the most peculiar and strangest of its attractions is found in its catacombs, or mummy chamber, here pictured. On the hillside overlooking the city is the Home of the Dead—the graveyard—and yet it is not a graveyard: it is a veritable Pantheon, or House of Burial. The tombs are arranged in the thick walls, tier upon tier, of identical size, like so many pigeon-holes, each recess being numbered. Wrapped up like mummies, the bodies of the dead are here placed, registered in a book, and known by the numbers of the recesses. A certain fee is expected yearly for caring for these

Photo by] [The Detroit Photographic Co.

THE MAJOR DOMO, GARDEN OF THE GODS.

Situated in Glen Eyrie, the Major Domo is particularly noticeable, as it stands out a fantastically-carved pillar over 120 feet high of blood-red sandstone

bodies, and if, after a period of five years, payment is discontinued, the bones are taken from their pigeon-holes and thrown in a heap in the catacomb below with countless other fleshless bones and skulls. Another body takes the recess with its number, but the former occupant cares not. His earthly concerns are ended.

In a moist climate such treatment of the dead would, of course, be impossible. But here, at this great elevation, and with an air as dry as an oven, as clear as crystal, and with rare aseptic qualities, the flesh dries up and ultimately crumbles to dust, giving out no odour of decay or suggestions of death. Now and again a tenant does not dissolve into his original elements. The dryness of the atmosphere simply mummifies him, and his perishable clay puts on the appearance of immortal age. In such a case the body is saved from the pile of bones. It is taken through the trap-door down the spiral staircase to the grim corridor beneath, where, with a grisly army of other mummies, it is stood up against the wall to await the blowing of the last trump. It is a ghoulish company, yet many are the visitors who go up the hill merely to gaze upon so strange and unusual a scene.

From Stereo by] [H. [illegible] Co.

THE GARDEN OF THE GODS, COLORADO.

These two rocks are named "The Twins." Behind them can be seen Pike's Peak, a mountain over 14,000 feet high.

The Garden of the Gods, Colorado.—Colorado is a State of mountains, plateaus, "parks" and such rugged scenery that one born and reared in a country like England has no possible conception of. One of the most accessible and popular places of wild and picturesque grandeur is the Garden of the Gods, five miles from Colorado Springs and about seventy-five miles from Denver. A fine road has been constructed over the mesa, or tableland, and four miles away Glen Eyrie is reached, where, through a private estate, visitors are allowed to enter and see the sandstone monuments—some of which are generally supposed to belong to the Garden of the Gods. The two chief rocks are the Major Domo and Cathedral Rock. The former a fantastically-carved piece of almost blood-red sandstone, one hundred and twenty feet high, with a rude knob or head, has a commanding or half-ferocious presence, which has been the cause of its title. It is only about ten feet in diameter at its base. A mile further on the splendid Gateway to the Garden is reached. The pillars that compose it are three hundred and thirty feet high, and just wide enough apart to allow space for the carriageway; in the centre of this is a red pillar twenty-five feet high, naturally dividing the roadway into an entrance and exit. Towering above us as we enter the garden, the majestic and snow-crowned summit of Pike's Peak, over fourteen thousand feet high, fills the horizon, and is beautifully framed in a rich setting of red sandstone.

The Garden of the Gods is a tract of about five hundred acres, thickly strewn with these fantastic and majestic natural monuments in red and white sandstone. The colouring of the rocks adds not a little to the effect, and to be properly seen the Garden should be visited in the morning or evening,

Photo by] *[The Detroit Photographic Co.*

THE GARDEN OF THE GODS, COLORADO.

A view showing the beautiful "Cathedral Spires." These sandstone pinnacles vary from one hundred to two hundred and fifty feet in height.

when the shadows are long, and so add variety to their charm. Immediately after a rain the hues are deeper, and the red becomes so vivid that the truthful representations of the artist are taken for rude exaggerations.

Immediately the traveller finds himself within the Gate he is in an enchanted region, where objects unreal, supernatural, mighty and strange overwhelm the senses. The road winds between every conceivable and inconceivable shape and size of rock, "from pebbles up to gigantic boulders, from queer little grotesques, looking like seals, cats or masks, to colossal forms, looking like elephants, like huge gargoyles, like giants, like sphinxes, some eighty feet high, all motionless and silent, with a strange look of having been just stopped and held back in the very climax of some supernatural catastrophe. The stillness, the absence of living things, the preponderance of bizarre shapes, the expression of arrested action, give to the whole place, in spite of its glory of colouring, in spite of the grandeur of its vistas ending in snow-covered peaks only six miles away, in spite of its friendly and familiar cedars and pines, in spite of an occasional fragrance of clematis, or twitter of a sparrow—spite of all these, a certain uncanniness of atmosphere, which is at first oppressive. I doubt if ever anyone *loved* the Garden of the Gods at first sight. One must feel his way to its beauty and rareness, and must learn to appreciate it as one would a new language; even if a man has known Nature's tongues well, he will be a helpless foreigner here."

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THE GARDEN OF THE GODS, COLORADO.

The "Tower of Babel," a colossal column of rock three hundred feet high

Two of the mystic figures are much alike, and being anchored together at their base by the same rock stratum are called "The Twins." Their ogre-like heads remind one of Dickens's description of the dwarf Quilp, or of Victor Hugo's Hunchback of Notre Dame; ugly faces, with rude protruding lips, their heads swathed in grey turbans. Seen in the moonlight, and especially if the stranger's eyes should happen to fall upon them unexpectedly, they would assuredly startle him by their weird and uncouth appearance.

More beautiful and impressive are the "Cathedral Spires," slender, slim, towering rocks that

rise to heights varying from one hundred to about two hundred and fifty feet, the natural accompaniments of the majestic Cathedral Rock near by.

Somewhat similar in general effect, but more massive and compact, is the "Tower of Babel." This approaches three hundred feet in height, and its spires are not so pointed as those of the Cathedral, yet they are fantastic and quaint and lend themselves with peculiar fitness to their name.

Another of the distinctive features of the rocks is that of the toadstool. These vary in size from tiny rocks up to six, ten, twelve and more feet in diameter. Some of them weigh many tons each. Others look like quaint Chinese hats, or a new style of umbrella. One of these is tall enough for a man to stand underneath, and a couple of children, caught here by a photographer on a rainy day, suggested that it was a land for the elves where tiny lovers could find that seclusion and shelter which is dear to the hearts of all lovers, human or fairy.

From Stereo copyr ght by [*Underwood & Underwood.*

THE GARDEN OF THE GODS, COLORADO

These "toadstool" formations are abundant in this park, and are of every degree of size, from tiny rocks to specimens of twelve feet or more in diameter.

To many visitors the most interesting of all the rocks is found to be "Balanced Rock," a massive cube as large as a dwelling-house, balanced on a pivot-like point at its base, as if a child's strength could upset it. Yet it is solid, fixed, immovable, and has so stood since it was first discovered by man. At certain angles a fairly good human profile is to be seen upon the face of Balanced Rock —the eyes, nose and mouth being fairly well adjusted, though the chin is elongated out of all proportion and the brow and head are "hilly and hollowy" enough to disconcert the most expert and experienced phrenologist.

All these fantastic and quaint forms have been carved out of the sandstone by the action of rain, wind, storm, sand, frost, and atmospheric gases. As the gradual degradation and cutting out and down of the surrounding rocks took place these masses were slowly detached from the parent stratum, owing to their having been better protected than the rest of the rock, or because they were composed of more durable substances, more compacted together, perhaps, and thus better able to resist the encroachments of the gnawing teeth of Time. Possibly the washing down of torrential waters from the near-by mountains may have helped considerably in their earliest emergency. Certain it is that water and wind have been the principal agencies in carrying away the dust and débris of this Nature workshop. Millions of tons have been thus disposed of: some to help fill up the now level country beneath, others to aid the rivers in scouring out the wild and rugged gorges, ravines and canyons that have given to Colorado and the adjacent States some of the most stupendous scenery known to man.

The Natural Bridge of Virginia.—Ever since its discovery the Natural Bridge of Virginia has ranked as one of the wonders of the United States. It is a solid mass of limestone, without

a break in it, carved by Nature out of a bed of limestone that once entirely covered the whole region. It is situated in Rockbridge County, Virginia at the extremity of a deep chasm or gorge, through which flows the little stream called Cedar Creek The bridge is two hundred and fifteen feet high, one hundred feet wide, and the span is about ninety feet. The middle of the arch is forty feet in perpendicular thickness, which towards the sides regularly increases with a graceful curve, as in an artificial structure. There can be no doubt that at one time, when the limestone blanket covered the whole region, a subterranean stream ran where Cedar Creek now is and carved out the tunnel, of which the bridge is but the tiny remnant, with the rest of the rocky stratum carried away by the wear and tear of the ages.

From Stereo by] *[J. C. White Co.*

THE GARDEN OF THE GODS, COLORADO.

Although it has the appearance of being balanced on a pivot, the "Balanced Rock" is solid and immovable.

The ravine throughout its whole length is most interesting, and one should follow up the stream until the lofty precipices on either side turn to steep wooded slopes. On the way up, Saltpetre Cave and Hemlock Island are worth visiting and further up is Lost River. There is just one spot where it appears, but one must search carefully to find it. Naturally one is supposed to drink of its water. It then disappears though its voice can be heard in the upper part of the glen, which is pervaded by its dull rumbling or moaning. The whole glen is a botanist's paradise, sedges, ferns, flowers attracting his attention on every hand, when the fluttering of the butterflies does not hold it. The brook also seems to attract the Louisiana water-thrushes in great numbers, and their loud ringing, disconnected, staccato song is by no means one of the least interesting features of a visit to this enchanting spot.

The Natural Bridge is a bridge in reality as well as in name, so, retracing one's steps, the visitor returns to the public road, and there walks over the arch. As the bridge is on the same plane as the surrounding country, it would be quite possible for one to walk or ride over it in a carriage or automobile and be totally unaware of the fact.

On the abutments of the bridge, as is usual at such places, many names are inscribed, but those at the Natural Bridge have special interest, because here, about twenty-five feet above the stream on the west side, George Washington carved his name. For three-quarters of a century this stood alone higher than that of any other visitor, until in 1818 a student in Washington College, James Piper by name, scaled the cliff from the foot to the top and wrote his name above that of the Father of his Country. This escapade was made the occasion of a thrilling piece of oratory, which was used by John B. Gough, the great temperance advocate, with telling effect.

The Upper Geyser Basin, Yellowstone Park.—For convenience the Yellowstone National Park is divided into rather arbitrary parts, as Upper Geyser Basin, Middle, and Lower Geyser Basins,

Photo by] [*The Detroit Photographic Co.*

THE NATURAL BRIDGE OF VIRGINIA

Situated in Rockbridge County, Virginia, this bridge, whose span reaches to about ninety feet, is considered to be one of the finest sights of the United States. On the west side of the bridge George Washington has carved his name in the limestone cliff.

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SUNRISE IN YELLOWSTONE PARK.

In the intense clearness of morning sunlight the glittering steam of the hot springs and the falling water of an active geyser create a brilliancy that is dazzling in its intensity.

Gibbon Paint-Pot Basin, etc. In the Upper Basin the principal geysers of the Park are found. It is the principal resort of the tourist and the best known portion of the whole region, for it is essentially the home of the geyser as seen in its highest development, there being no less than fifteen examples of the first magnitude and scores of less important ones. The chief springs and geysers are on the Firehole River The Basin itself is almost triangular in shape, and is formed by the convergence of the Firehole and Little Firehole Rivers. Its area is about four square miles, but the principal geysers are situated within an area of half a mile or so on either side of the Firehole River. When the geysers are very active this river is materially increased in volume, and its temperature is affected by that of the springs. For instance, in the distance of a quarter of a mile from Old Faithful to a point opposite Grand Geyser, it is often 7° Fahr. warmer than anywhere else. The surface of the basin consists of a succession of ridges and knolls, crowned with geysers and boiling springs. On every side are mountains, one thousand five hundred feet in height, the slopes of which are heavily timbered, although there are occasional outcroppings of rough basaltic rocks among the pines.

Climb up with me to a suitable height on one of these hills and let us overlook the basin. It is a clear and beautiful morning. Sunrise is shedding its colour and glory over the scene. "Clouds of steam ascend from geysers and springs and hang like palls over the Basin, and columns of vapour float upward like water-wraiths from between the tree-tops of the surrounding forest. The earth is full of rumbling and gurgling sounds, and the air is laden with sulphurous fumes. Stupendous fountains of boiling water, veiled in spray, shoot toward heaven, at varying heights, like reversed cascades, glinting and coruscating and scintillating in the morning sunlight, until their force is expended, when they fall in showers of splashing pearls, with a shock that makes the ground tremble." What is this wonder world over which we are gazing ? It is so different from any other scene. Whence comes this steam and vapour ? It seems like a vast out-of-door kitchen, where the cooks are somewhat careless at times and liquids are allowed to boil over and send up their steam in protest. Watch again for awhile. Do you see yonder little mound ? That is the cone of a geyser. It rises, as you observe gradually from the plane of the formation, and were you to stand by its side and look down into it, you would find a rudely-shaped orifice out of which issue strange gurglings,

bubblings and even hoarse roarings and grumblings, as if some giant were preparing to eructate. Now it gives forth a loud roar. Beware! Stand back! In a moment, with a rush and power that at first terrify one, a white obelisk column or shaft of scalding, steaming water shoots up into the air, sometimes as high as two hundred and fifty feet, and like a fountain is held in swaying beauty until the original force is expended, when it suddenly drops to the earth and all is quiescent again.

What is it that makes the geyser. Bunsen's theory was that the geyser makes its own cave and tube. If it be composed of water that is not alkaline, the spring will remain an ordinary boiling spring. If alkaline, silica is held in solution, and the silica is deposited about the spring. Thus a mound and tube are gradually built. For a long time, a spring of this character may boil, but not be violently eruptive, the circulation maintaining nearly an equal temperature in every part of the tube. But, as the tube becomes longer, and the circulation more and more impeded, the difference of temperature in the water in the upper and lower parts of the tube grows greater and greater, until at length the boiling-point is reached below, while the water above is comparatively cool. Then begins the eruption, to be repeated with more or less frequency for a period of years. Finally, either from a gradual failure of the subterranean heat, or else from the increasing length of the tube, by which the formation of steam is repressed, the eruptions gradually cease.

It is interesting to watch the process by which the terraces, cones and chimneys have been built up. While the methods vary somewhat in accordance with the material held in solution by the water, the principle of slow accretion is practically the same. If you stand on one of the terraces overlooking the mammoth hot-springs region you can soon satisfy yourself that the terrace itself has been built up, even though you are three hundred feet above the plateau, by the slow deposits from the overflowing waters of the boiling hot springs. As the water reaches the cold air outside a rapid evaporation takes place. This precipitates whatever mineral is held in solution, whether

Photo by] *[The Detroit Photographic Co*

THE GROTTO GEYSER, YELLOWSTONE PARK

A wonderful formation of snow-white geyserite

silica, as in the geysers, or limestone, as in these springs. For centuries this process continues, the deposits naturally increasing with the years, no matter how slow the process may be The ripples seen in the engraving are made of these deposits. They are called travertine, or, when made from the geysers, geyserite, and in the course of ages they climb higher and higher until they form the terraces presented in earlier pages of this work.

From all these remarks, therefore, it will be apparent that even now the Yellowstone Park region is a region of change. The geysers are not always the same. For instance, after visiting the Biscuit Basin, in which are the Jewell Geyser and the Sapphire Pool, the traveller reaches Artemesia Geyser. This geyser came into action as recently as 1886, while two years later, in 1888, the Excelsior, at that time the greatest geyser in the known world, while spouting with more than its usual vigour, ruptured its crater and has never spouted since. In its former periods of activity it is said to have often raised the Firehole River seven feet in as many minutes with the rapid outrush of its waters.

From Stereo copyright by [*Underwood & Underwood.*

THE CRATER OF OLD FAITHFUL, YELLOWSTONE PARK.

The crater of this most famous geyser is encrusted with geyserite, a silica which is deposited when the scalding mineralized water is evaporated into steam.

The Sapphire Pool is the chief object of interest in the Biscuit Basin. As its name implies, it is a pool of rich sapphire hue. It is not so beautiful in form as the Morning Glory, but the colour of the water is richer in places.

Above the Artemesia is the Sentinel, and then comes the Morning Glory, an exquisitely beautiful quiescent pool which seems to have arrested in its limpid waters the translucent glory of the flower whose name it bears. Its border is variegated in colour, rich reddish-browns predominating, but all in perfect harmony with the deep cerulean hue of the transparent waters beyond. Some minds find a far greater fascination in these quiet pools of colour allurement than in the more noisy, active and modern spirit of the active geysers, and it is no uncommon thing to find such people returning again and again to the Morning Glory to drink in to the full its rare and unique graces and charms.

But unquestionably the most powerful source of popular attraction in the whole Park is Old Faithful geyser. As Captain Chittenden well writes: "Any other geyser, any five other geysers, could be erased from the list better than part with Old Faithful. The Giant, Giantess, Grand, Splendid, and Excelsior have more powerful eruptions. The Bee Hive is more artistic. The Great Fountain has a more wonderful formation. But Old Faithful partakes in a high degree of all these characteristics, and, in addition, has the invariable quality of uniform periodicity of action. It is in fact the most perfect of all known geysers. To it fell the honour of welcoming civilized man to this region. It was the first geyser named. It stands at the head of the Basin and has been happily called 'The Guardian of the Valley.'

[Photo by The Detroit Photographic Co.

"OLD FAITHFUL" GEYSER, YELLOWSTONE PARK.

The eruption of "Old Faithful" occurs once in sixty to sixty-three minutes, and is almost as regular as the striking of a clock. It is that regularity which gives the spring its name. Scientists have calculated that at each eruption 1,500,000 gallons of water are ejected.

From Stereo by] *[H. C. White Co.*

THE PUNCH BOWL, YELLOWSTONE PARK.
One of the hot springs of the Upper Geyser Basin.

"It is located in the centre of an oblong mound, one hundred and forty-five by two hundred and fifteen feet at the base, twenty by fifty-four feet at the summit, and about twelve feet high. The tube which seems to have originated in a fissure in the rock, has an inside measurement of two by six feet."

Few people can conceive the immense amount of work performed by this geyser. The United States Geological Survey, in 1878, made a series of extended observations of Old Faithful, and conservatively estimated that the outpour for an average eruption is not less than one million five hundred thousand gallons, which gives thirty-three millions two hundred and twenty-five thousand gallons per day. This would supply a city of three hundred thousand inhabitants.

The Claus Spreckels Building (more generally known as the "Call" Building), San Francisco, California.—This building, nineteen stories in height, situated at the south-west corner of Market and Third Streets, San Francisco, California, has a frontage of seventy-five feet on Market and seventy feet on Third Street. The design, however, is treated as though both fronts were of the same width, in such manner as to make this variation unnoticeable.

The building is notable not only for its correct architectural proportions, but for its height in relation to ground area. It is three hundred and fifteen feet from level of sidewalk to top of dome, and exceeded in this respect, at the time it was built, any of the previous architectural achievements in this country. It is also notable for the fact of being located within the earthquake zone and for having passed through the great earthquake and fire of April, 1906. The following extracts taken from the United States Government Geological Survey of the San Francisco Fire and Earthquake, issued by the Department of the Interior, give a brief synopsis of the construction :

"Of all the commercial buildings in San Francisco, by far the most interesting was that known as the Call (or Spreckels) Building, at the corner of Third and Market Streets. This building is remarkable for the care and skill shown in the design of its steel work. It is a steel frame building, all the walls, floors, partitions, etc., being carried on steel work. It has fifteen main stories, in addition to the stories in the dome or cupola, and rests upon a continuous foundation composed of concrete reinforced with steel beams. The building proper is about seventy-five feet square, but the foundation is about ninety by one hundred and ten feet and was carried to a depth of about twenty-five feet below the sidewalk level. A fairly complete and satisfactory description of this building was published in the *Engineering Record* of April 9 and 16, 1898.

"In the first four stories above the street the bents of the steel work adjacent to the four corners of the building on each side were braced with solid portal braces. In addition, eight interior bents were braced with diagonal tiebars from top to bottom. At all junctions of girders and beams with columns, knee braces were used. The design of this steel work is well worthy of study by anyone

interested in such structures. It is probably, on the whole, the best designed piece of such work in the United States. Another remarkable thing about it is that the execution was apparently as good as the design. In a number of places where the fireproofing had come off, the connections were exposed, and the workmanship here seemed to have been practically as good as it could well be made. I particularly noticed the column bearings, and they seemed to be absolutely close and true. Inaccurate column bearings in building work are so often seen that one is almost justified in saying that they are the rule rather than the exception; but in the Call Building such connections as were exposed to view had been put together with extreme accuracy. . . .

"The only safe plan in the construction of steel-frame buildings is the one followed in the Call Building—that is, to brace the steel work so that by itself it is able to resist the stresses due to the vibration. The engineer who designed the foundations and steel frame of this building may well be gratified at the admirable manner in which his structure fulfilled its purpose. . . ."

It withstood the earthquake shock without any damage whatever; but later on the same day was swept by the fire, which practically destroyed the city, and all the fine interior finish was burned out. This was restored within a few months, however, and on the 22nd of May following the catastrophe the *San Francisco Call*, from which the building derives its popular name, issued its paper from its own presses in the building, and after a short period no vestige of the ravages of the fire was to be seen in the structure.

The building is designed in the Italian Renaissance style, and is one of the best examples to be found of the adaptation of that beautiful type of architecture to commercial structures.

Photo by] [*The Detroit Photographic Co.*

"MORNING GLORY," YELLOWSTONE PARK.

The sinter slopes of the mouth of this geyser appear stained a deep cerulean blue by the translucent waters, and the fringe of the pool is a glittering border of metallic colourings

Photo by [*The Detroit Photographic Co.*

THE CLAUS SPRECKELS BUILDING, SAN FRANCISCO.

This magnificent building, nineteen stories high, withstood the earthquake shock of April, 1906; but the interior fittings were damaged by the fire that broke out immediately afterwards. Only a few months, however, were required to restore these completely

The treatment of the exterior is the same on all four sides, above the line of the seventh story, and stands out as a well-proportioned tower, noticeable from nearly all points within the city, and particularly so on entering the harbour, over which, at night, the great lantern surmounting its dome casts its rays at all hours. The outlook from its upper stories is unsurpassed, giving as it does a panoramic view of the bay and surrounding country for miles in all directions, Mount Diablo and adjacent hills, often snow-clad, being distinctly visible on clear days.

Granary of the Cliff-Dwellers in the Sierra Madre Mountains of Mexico. — Wherever primitive man has sought to make for himself fixed dwellings one of his first requisites has been to plan for the safe storage of his food. Many scores of pages of this work might be taken up with pictorial and verbal descriptions of the various storage methods followed by the North American Indians alone, from the Meala Hawas, or corn storage cliff-rooms, of the Arizona cliff-dwellers to the stilted acorn-storages of the Yosemite Valley Indians, and the massive mesquite-bean pits of the Indians of the Colorado River. Perhaps the quaintest of these storages, or granaries, are those found in the cliff ruins of the Sierra Madre in Mexico.

When Carl Lumholtz, the great explorer and ethnologist, discovered these people, still dwelling in the cliff cities their ancestors had constructed, he found that little or no change had taken place in their habits for a score or more of generations. Their food was largely composed of the seeds of grasses—which they gathered during the harvest time, with basketry fans, by means of which they struck the seeds into large carrying baskets

manipulated with the left hand—certain edible roots and acorns, as well as the corn or maize grown to such perfection by the North American aborigine. There were times of drought, however, when little food was to be obtained; then, too, their enemies occasionally so beset them as to render the gathering of their harvests impossible. The wise men of the tribe, therefore, prescribed that a certain proportion of each crop should be set aside for such emergencies. It was no uncommon thing to find a supply sufficient for three years set apart in the storage houses.

But how to protect this food from rats, mice, squirrels, and such vermin was a grave question. The best solution of the problem was found in the construction or erection of granaries of stone and rude concrete, with few and small apertures, all of which could be covered with rock and plastered

Photo by] [*Underwood & Underwood*

GRANARY OF A CLIFF-DWELLING, SIERRA MADRE, MEXICO.

In order to protect their food, which consisted of seeds of grasses, acorns, etc., from predatory animals, the cliff-dwellers built large granaries. Those of the Arizona and Colorado districts are excavated in the cliff, but the Mexican storehouses took the form here depicted, which, it will be noticed, is really a large inverted water jar

up. In this way the food was protected both from the elements and from any ordinary predatory animal

The engraving shows the appearance of one of these masonry granaries. The shape is peculiar, but appropriate. The Indians' power to change and adapt forms for differing uses will be readily apparent when it is observed that this is merely an ordinarily shaped water-olla, or jar, turned upside down and enlarged to the required size. It stands nearly twelve feet high and is capable of holding what, to the provident Indians, was a large store of food.

In the cliff-dwellings of the American South-West, in Arizona, Southern Colorado, etc., most of the granaries are built into the walls of the cliffs.

The Muir Glacier.—While studying the Mountains of California (which studies he afterwards embodied in a book of this title), John Muir became much interested in glaciers. At that

time no one believed there were any living glaciers in California, but Muir, with the spirit of the true scientist, set to work to prove the matter. As one result of his word-painting one of the finest and best of the glaciers of Glacier Bay was named after him, Muir Glacier. Steamers going north to Sitka frequently enter Cross Sound and proceed by way of Icy Straits and Chatham to Peril. In the warmest months Icy Bay is filled with icebergs floating down from the many glaciers to the north. Kate Field thus describes the Muir Glacier: "Imagine a glacier three miles wide and three hundred feet high. Picture a background of mountains fifteen thousand feet high, all snow-clad, and then imagine a gorgeous sun lighting up the ice-crystals with rainbow colouring. The face of the glacier takes on the hue of aquamarine—the hue of every bit of floating ice that surrounds the steamer. This dazzling serpent moves sixty-four feet a day, tumbling headlong into the sea, startling the ear with submarine thunder."

Photo by] [*Dr. A. Shufeldt.*

MUIR GLACIER, GLACIER BAY, ALASKA.

Until the year 1900, when an earthquake broke up its vast extent, this glacier was the largest in the world, with a width of over three miles. Even to-day it is a magnificent palisade of crumpled ice.

Early in 1900, however, disaster befell this great glacier. Its area was equal to the state of Rhode Island, and it was one of the most remarkable in extent known, as well as one of the most majestic and beautiful. In that year an earthquake shattered its glorious frontal face and completely changed its appearance.

The bergs falling from the shattered front of the glacier completely choked up Glacier Bay, so that for six years the large steamer *Spokane* could not approach nearer than Marble Island, thirteen miles from the glacier's face. Hence visitors were deprived of the pleasure they had enjoyed in the past. But in 1907 a steamer entered the bay and found it free from ice. Approaching the great glacier they found it shattered. Its once opaline palisades are now but a field of crumpled ice. Its great towers, turrets and walls have fallen, and it is a mere spectre of its former grandeur.

CHAPTER XVIII.

By GEORGE WHARTON JAMES.

The Canyon de Chelly.—Just on the borders of Arizona and New Mexico, within about a hundred miles of the northern line, is an ancient pueblo region full of fascination and attraction. It is of equal importance with the Mancos region, before described, though the ruins are not quite as large. At the time the United States sent its "Army of the West" to the subjugation of California, in 1846, and, later, when the gold hunters of 1849 rushed across the Continent, vague rumours of wonderful cliff cities reached the East. But as the Canyon in which these ruins were found was in the heart of the Navaho Indian country, and these Indians were warlike and hostile, exploration was practically impossible. It was found necessary, however, to send out an expedition to subjugate the Navahoes, and the troops were placed under the command of Lieutenant J. H. Simpson, and to this enlightened officer's report the world at large owes its first real and accurate knowledge of these remarkable aboriginal ruins. The name "De Chelly" suggests a French origin. This, however, is a pure error in transcribing the Navaho name for the place, Tsé-gi (pronounced Tsaý-gy).

The country in which the Canyon de Chelly occurs is a plateau country, the most conspicuous feature of which is a massive bright red sandstone formation out of which have been carved the most striking canyons, which for all ages will be a wonder and a delight to the sons of men. These canyons are the Grand Canyon of the Colorado River, the Canyon de Chelly, the Canyon del Muerto, and the lofty pinnacles, towers and domes of the San Juan Country.

The Canyons de Chelly and Del Muerto run, the former to the north-east and the other almost due north. From De Chelly runs another canyon to the south-east, known as Monument Canyon.

Photo by] [Underwood & Underwood

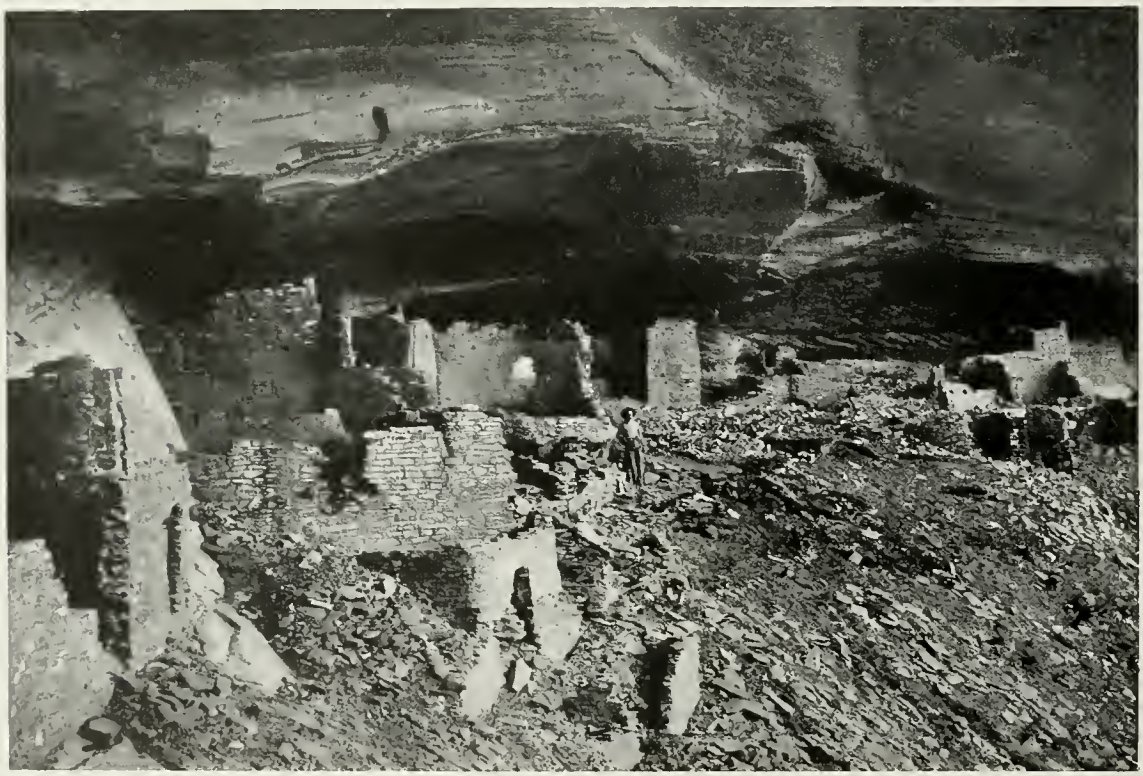
THE CANYON DE CHELLY

The walls of this canyon range from a height of between twenty and thirty feet at its mouth to over 800 feet at its juncture with Monument Canyon.

When it is known that in these three Canyons there are fully one hundred and twenty-eight different cliff-residences in ruins, and that some of these consist of many rooms, it can well be seen that quite a population must, at one time, have found refuge here. For, as I fully explained in writing on the Mancos Canyon ruins, these cliff-dwellings were the places of refuge of a pastoral people followed and hunted by nomadic, warlike and hostile foes.

Before proceeding to a description of the ruins of the Chelly Canyon, attention must be called to the Canyons themselves in which they occur. Under the direction of the United States Bureau of Ethnology, the accomplished ethnologist, Cosmos Mindeleff, made a thorough study of both canyons and ruins, and here is his description of the former :

" At its mouth the walls of Canyon de Chelly are but twenty to thirty feet high, descending



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CLIFF-DWELLINGS, CANYON DEL MUERTO.

Del Muerto is a branch canyon of De Chelley. These ruins in the Eastern Cove, Mummy Cave, were especially constructed for purposes of defence; they are built on the upper part of the canyon, and command an extensive outlook.

vertically to a wide bed of loose white sand, and absolutely free from talus or débris. Three miles above Del Muerto comes in, but its mouth is so narrow it appears like an alcove and might easily be overlooked. Here the walls are over two hundred feet high, but the rise is so gradual that it is impossible to appreciate its amount. At the point where Monument Canyon comes in, thirteen miles above the mouth of De Chelly, the walls reach a height of over eight hundred feet, about one-third of which consists of talus.

" The rise in the height of the walls is so gradual that when the Canyon (Monument) is entered at its mouth the mental scale by which we estimate distances and magnitudes is lost and the wildest conjectures result. We fail at first to realize the stupendous scale on which the work was done, and when we do finally realize it, we swing to the opposite side and exaggerate. At the junction of Monument Canyon there is a beautiful rock pinnacle or needle standing out clear from the cliff and not more than one hundred and sixty-five feet from the ground. It has been named, in conjunction

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THE CLIFF-DWELLINGS, CANYON DE CHELLY.

These are some of the finest of the cliff ruins. It is supposed that the lower house, situated on the bottom land, was four stories high, and so was continuous with the upper part built upon the cliff's ledge. It is called Casa Blanco, which in the Navahoes' language is Kini-na e-kai

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CLIFF-DWELLINGS, CANYON DEL MUERTO.

This cliff-dwelling is composed of about twenty rooms, with three or four circular chambers used as state rooms for worship, and called "kivas."

with a somewhat similar pinnacle on the other side of the Canyon, 'The Captain,' and its height has been variously estimated at from one thousand two hundred to two thousand five hundred feet." It actually is a little less than eight hundred feet. Its majesty and beauty may well be seen from the accompanying illustration.

Canyon de Chelly Ruins.—Let us now turn to the cliff ruins which have given the canyon its fame, for here the Indians have built their houses and have lived out their pathetic lives. Many of them have also found burial within the walls that they themselves had helped to erect.

At the mouth of the canyon the whole bottom land from wall to wall consists ot an unbroken stretch of sand. A little higher up small patches of alluvial and cultivatable lands appear, generally in recesses and coves in the walls, and but slightly above the level of the stream bed. But higher up still these areas are much enlarged, and often take the form of terraces or benches, most of them well raised above the stream bed, even as high as ten feet above. At the Casa Blanca, seven miles up, the benches are well marked and the land excellent. Three miles above Casa Blanca, however, the talus begins to appear at the foot of the cliffs, and as soon as this comes into evidence the patches of alluvium grow less and less, until they finally disappear.

These patches of land gave to the cliff-dwellers their chief means of subsistence, and while protection in the almost inaccessible cliffs was what they primarily sought, they were equally anxious to locate themselves near to the land on which they could grow their corn. Yet, strange to say, these primitive corn-growers in this region have left no sign that they irrigated their crops. Indeed, it would have been practically impossible in the Canyon del Muerto, owing to the peculiar nature of the stream that flows down it during the rainy season.

THE SAPPHIRE HOT SPRING, YELLOWSTONE PARK.

This Sapphire Spring is of the deepest imaginable blue. Toward its edge it is broken up into little [illegible] capacity of mineral deposit.

The occupation of the cliffs was merely for the purpose of greater protection and security from nomad and hostile tribes. Some ruins are found on bottom land, near to the arable areas capable of cultivation; others of an older type are found on open and indefensible sites; still others, clustered as villages, and located for defence chiefly; while a fourth class are mainly cliff outlooks or shelter places to which the farmers might run in case of sudden attack.

The accompanying illustration on page 580 gives a good representation of the first of this classification. It is the largest ruin of this character in Canyon del Muerto. There are standing walls three stories high, and the masonry shows excellent workmanship. The back cliff has not entered into the plans of the builders to the extent that it generally does. There are about twenty rooms and three or four kivas—the latter being the circular chambers used in worship or ceremonials. Most of the rooms are rectangular and fairly regularly arranged, though small. Only one room still preserves its roof intact. In the centre of the ruins is a kiva, over thirty-six feet in diameter; this is exceptionally large, and it is probable it was never roofed. Inside this structure were found several burial cists made by the Navahoes in recent years. West of this large kiva were two others, about twenty feet in diameter; one being circular in form and the other more nearly approaching an oval.

One of the most important and strikingly picturesque of the ruins is called Casa Blanca (Spanish for "White House"). The ruin consists of two parts—a lower, comprising a large cluster of rooms on the bottom land against the vertical cliff, and an upper part, which was much smaller and occupied a cave directly over the lower portion and was separated from it only by some thirty-five feet of vertical cliff. There is every evidence that the lower settlement was four stories high, and, therefore, reached to the upper settlement, so that the house was practically continuous. The lower

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NAVAHO BURIAL CIST, CANYON DEL MUERTO.

These burial urns, of which one of the best-preserved specimens is here shown, were built by a race later than the original cliff dwellers. There are hundreds of them, and they probably explain the name of "Canyon del Muerto" the Canyon of the Dead

ruin covers an area of about one hundred and fifty by fifty feet, raised but slightly above the bottom land. The remains of forty-five rooms and a circular kiva can easily be identified. On the east side some of the remaining walls are twelve and fourteen feet in height.

Photo by [*The Detroit Photographic Co.*

THE AGASSIZ COLUMN, YOSEMITE VALLEY.

Named after the great naturalist, this imposing shaft of granite is eighty-five feet high. Erosion has worn its base to an apex, which, however insecure it may look, will yet stand the wear and tear of many centuries.

From the fact that within the lower ruins there are found some adobe walls, and also the remains of a peculiar construction known to the Mexicans as *jacal*, it has been inferred that after the ruins were abandoned, some time, perhaps, in the seventeenth century, a people other than the original builders occupied them. There are four Navaho burial cists in these ruins, and while three of them are broken down and in ruins, they undoubtedly come later even than the adobe additions referred to.

Of those ruins unquestionably constructed for defence, the finest example in the whole region is in Canyon del Muerto, and is known as the Mummy Cave ruin. It is in the upper part of the canyon and commands an extensive outlook. The principal structure in the Eastern Cove is the kiva, around the interior of which was a bench of stone, extending completely around the circuit; and above this, on the wall, is a remarkable decorative band, the purpose of which was mainly to show the assembled priests the direction of the cardinal points. To this day, in many of the ceremonies of the pueblo Indians, it is absolutely essential to the right conduct of the worship that at certain times offerings, etc., must be made to the powers that control the cardinal points. Hence the necessity of clearly and positively indicating where these are. The ruins have long been used by the Navahoes for burial places, hence, doubtless, the origin of the name by which they are known.

In the building of many of the cliff-structures the walls were allowed to rest on refuse, rocks, etc., without any attempt to clear away the site. This fact and the crude method of building is easily discernible, though it must not be assumed that all the work was done in this indifferent fashion. Some of the masonry is beautifully laid, even though the material be not of the best. An attempt

Photo by] [*The Detroit Photographic Co.*

THE YOSEMITE FALLS, YOSEMITE VALLEY.

This magnificent body of water has a width of thirty-five feet at its highest ledge, and descends to the valley in three leaps to a depth of 2,500 feet. The volume of water is greatest in early summer.

Photo by [*The Detroit Photographic Co.*

THE THREE BROTHERS, YOSEMITE.

The Navaho Indian name for these heights is Pom-pom-pá-sus, or the Mountains playing Leap-frog.

Photo by [*The Detroit Photographic Co.*

EL CAPITAN, YOSEMITE.

This north-western buttress of the canyon is one of the most striking objects of the valley. Its bare and almost vertical cliff allows only the adventurous to reach its summit

at regularity, and, possibly, at decorative effect, is apparent in the uses of courses of fairly uniform thickness, alternating with other courses or belts composed of small thin fragments.

The illustration on page 581 shows one of the Navaho burial cists found in the ruins. The number of these is remarkable, there being literally hundreds of them—hence, doubtless, the name of the tributary canyon to Chelly, "Canyon del Muerto"—the Canyon of the Dead. These cists are built usually in a corner, or against a wall of a cliff-dweller's house, but sometimes against a cliff wall, and occasionally stand out alone. The masonry is always rough, much inferior to the old walls against which it generally rests, and usually very flimsy. The structures are dome-shaped when standing alone, or in the shape of a section of a dome when placed against other walls.

The Yosemite Valley.—Ever since this valley was discovered by white men in 1850 it has been regarded as one of the picturesque wonders of the world.

The name Yo-sém-i-te, is pronounced in four syllables as indicated, with accent on the second, and is a corruption of the Indian "Yo-ham-i-te," which signifies "the Destroyer"—this being the poetic way these Indians had of describing their arch-enemy, the grizzly bear. Hence Yosemite in reality means the Grizzly Bear, and in the earlier days of its discovery many of these giant monarchs of the High Sierras were found within its borders. It is only a few years since the Yosemite Valley Railroad was built, reaching from the main line of the Southern Pacific at Merced to El Portal, just on the northern border of the Yosemite reservation. And now the stage ride into the valley extends for some ten or twelve miles, although one really enters the valley within three or four miles after leaving El Portal. The Yosemite never disappoints. No matter how exalted the expectation be, it never transcends the reality. Whether first seen from Inspiration Point, Old Inspiration Point, or Artist's Point, a wonderful view always arrests the attention of the traveller.

On the floor of the valley are trees in richest leafage and astonishing variety, through the green of which, here and there, can be seen the silvery glint of the Merced River. The Bridal Veil Falls, to the right, descend over the ledge of granite rock

white and ethereal, and seem to drop in a tenuous film into the tree-tops, appearing small and feeble at first, so overpowering is the impression of the mightier wall. Its location is such that it catches the incoming breezes, and the wind, getting between the fall and the wall behind, seems to dissipate the water in lace-like veil, breaking to rainbow hues in the fire of the sun, adding diamond-like brilliancy to the first impression of shimmering whiteness. As soon as the spectator approaches closer, however, he gains a new sense—that of its mighty power.

The Indians call this "Po-ho-no" (the Spirit of the Evil Wind), in this way giving expression to the peculiar fact to which I have called attention. In the ripple of the water the Indians think they hear Po-ho-no's voice, and in the spray discern his mocking features and the wraiths of the maidens and hunters he has trapped on the slippery mosses at the head of the fall and dragged down to destruction.

The most dominant feature on entering the valley, however, is El Capitan. The Indians call it "Totokónula" (the Great Chief or Captain of the Valley). It is a solid mass of granite, without a crack or break, and if it were tilted forward it would cover one hundred and sixty acres. It is an inland Gibraltar, standing so long as man shall know it as the type of massive stability reinforcing man's courage and strength and urging him to be firm and enduring as this austere and silent granite mass. Just beyond El Capitan are the Three Brothers, far more poetically called by the Indians "Pom-pom-pá-sus" (the Mountains playing Leap-frog).

About midway up the valley is the greatest source of attraction of all, the great Yosemite Falls. Seen in the spring, when in the full flow of its early waters, it is the highest waterfall in the world with anything like the same body of water. It is a stream thirty-five feet wide, which plunges down sixteen hundred feet in one direct

Photo by [*The Detroit Photographic C*

THE HANGING ROCK, GLACIER POINT.

This rock is situated on the south side of the valley, two miles from the Three Brothers. It affords a magnificent view over the whole valley to the distant snow capped Sierra Nevada.

vertical descent, then for six hundred feet it roars in a majestic series of cascades to the head of the lower fall, where it makes another direct vertical leap of four hundred feet. Its roar and crash are heard for miles, and when one stands still and listens there are times when the ponderous weight of its fal fairly shakes the floor of the valley. There is no doubt but that, originally, it fell the sheer three thousand feet of the north wall, but at some period, the wall was shattered as it is now found. Beauty and power are both personified in this peerless fall. Its winter glory is even more beautiful, in some respects, than its spring freshness. Everything surrounding it is robed in virgin purity; the spray it casts covers the very snow with a delicate frosting that is indeed a "painting of the lily." A cone of solid ice, five hundred and more feet high, accumulates at the base of the upper fall, and I have seen icicles hang six times as high as the whole depth of Niagara.

Photo by] [*The Southern Pacific Co.*

LIBERTY CAP, YOSEMITE.

In the distance rises the mighty granite mass of Liberty Cap, while nearer the spectator are the Vernal and Nevada Falls. These two cascades are little inferior to the Yosemite Falls, and the forested waterway makes a setting of exquisite beauty.

Directly opposite the Yosemite Falls is Sentinel Dome, with its peculiar cap of conoidal, or onion-like layers, towering four thousand one hundred and forty-two feet above the floor beneath.

A little further up and beyond Sentinel Dome, the south wall thrusts out a rugged shoulder, well named Glacier Point. At no other point is the wall so bare and sheer, and you look up, almost from its solid foot, three thousand two hundred and thirty-four feet. The flag which sometimes floats from the brink of the precipice is eighteen feet long, yet it is seen dimly and appears no larger than a lady's handkerchief. This is a favourite outlook point, and an iron railing has been placed, so as to afford "sheer down" views with security. It is easily reached on horse- or mule-back by one of two wonderfully engineered zigzag trails, one of which passes Union Point, two thousand three hundred and fifty feet above the river. Just below is Agassiz Column, named after the great naturalist. It is an imposing shaft of granite, eighty-five feet high, but its base is so eroded that it looks as if it would give way and let the column above fall ere long. Yet it is doubtless stable for many centuries yet to come.

The Royal Arches are near the head of the valley, in the vast vertical wall whose highest summit is North Dome. The arches are recessed curves in the granite front, very impressive because of their size, and made by the action of frost. Much of the rock here is formed in layers like the structure of an onion, and the arches are the fractured edges of these layers. Washington's Column is the angle of the wall at this point—a tower completing the massive wall at the very head of the valley.

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RED MOUNTAIN CRATER, ARIZONA

At one time an active volcano, this mountain is to-day only a picturesque height of red volcanic ash, rising from the great Painted Desert in the north-west of Arizona. The activities of a bygone age have rent its mass into these great fissures and caverns and corridors.

Over against it, but looking down the valley, stands the highest rock of all the region—the great South Dome, or Half Dome, as it is often called. It is eight thousand nine hundred and twenty-seven feet above sea-level, or nearly five thousand feet above the valley. Its massive front is cleft straight down for about two thousand feet, and the fractured face turned outward is polished by wind and storm. The side of the Half Dome turned toward the south-west has the curve of a great helmet and is so smooth and precipitous as to almost defy the most adventurous mountain climber. Milton wrote of

> "A rock piled up to the clouds,
> Conspicuous afar,"

and this certainly describes the Half Dome. After one has passed El Capitan this is the dominant feature of the Valley. For the Half Dome has no counterpart as far as is known, either in these mountains or elsewhere. Its name suggests what its appearance indicates, viz., that in some giant convulsion it has been split directly through its vertical axis. Where has the other half gone? As the Spaniards say, *Quien sabe?*—who knows? The Indian name for it is *Tissayac*, or the Goddess of the Valley.

Even yet the wonders of the Yosemite are not exhausted, for returning to where we turned to follow Tenaya Creek, we find the more attractive side or branch gorge on the south, and take the beautiful bridle-path. It leads us along the rushing Merced River, past the Happy Isles and along the bottom of a wild canyon and beside titanic walls. Panorama Rock is four thousand feet above the river, almost perpendicular, and at once the highest and most continuous wall of the Yosemite. From here the Vernal Falls can be seen, and the river, nearly eighty feet wide, drops sheer down three hundred and fifty feet. The spray is driven outward like smoke,

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MARIPOSA: BIG TREE GROVE, CALIFORNIA.

"The Fallen Monarch," as this tree is named, is one of the largest specimens in this forest of giant trees. It is computed to be about 8,000 years old.

and everything of plant and grass, moss and fern, is kept vividly green by the incessant baptism. The trail leads directly to the top of the fall.

A little beyond—less than a mile—is Nevada Falls, where the same stream plunges downward seven hundred feet. The great snowy torrent glances from sloping rock about midway just enough to make a compound curve. The setting of the fall is impressive—Great Liberty Cap, a granite pile, rises more than two thousand feet above the pool, with Mount Broderick just back of it and the Half Dome near at hand.

The Red Crater, Arizona.—In Northern Arizona, the Santa Fé railway passes on the edge of one of the most wonderful lava regions of the world. Indeed, there are three lava flows here, known to but few scientists, all of which are vast in extent and wondrous in their varied manifestations. Here, twenty miles to the north-east, is Sunset Crater, a volcanic cone, the scoriæ of which are of a brilliant peach-bloom colour.

Near by is O'Leary Peak, another volcanic cone, several thousand feet high, made of completely black rock, without a blade of grass even to relieve its sombreness. The rock of which the crater is composed has become disintegrated with the weathering of the years, and is now exactly like gunpowder of large-sized grains. Furthermore, there are the lava beds with a variety of forms: in one place the half-solid lava has been rent in such peculiar fashion that now it has cooled it suggests gigantic black cauliflowers. No wonder that the cowboys who first saw it called this portion of it "the devil's cauliflower patch." This lava region is on the very edge of the Painted Desert.

Another most interesting feature of this desert is the Red Mountain Crater, to the north of the San Francisco peaks. The Grand Canyon is forty miles to the north of it, and the province of Tusayan (where live the Hopi Indians) is seventy miles to the north-east. Forty or fifty miles to the north-west is Havasu (or cataract) Canyon (one of the tributaries of the Grand Canyon), where dwell the Havasupai Indians, to which tribe I was duly inducted as a member twenty-five years ago. In one of my hunts with the leaders of the tribe we came to this rugged red mound or hillock, several hundred feet high, with clumps of juniper and pinion scattered here and there. Our canteens were empty, our tongues parched, our faces scorched with the heat of the afternoon sun. I knew that every water-hole or pocket, as well as every hidden spring, was known to my Havasupai brothers, so I did not question that we were going to where water was to be found. Yet as we climbed the rugged slopes of blood-red rock, shattered and broken by the storms and weatherings of centuries, and pictured what was evidently the history of the mound, it seemed impossible that we could find water here. I saw how that in the period of the volcanic activity of the region this very mound was slowly built up by the flowing lava which cast its lurid flames and weird

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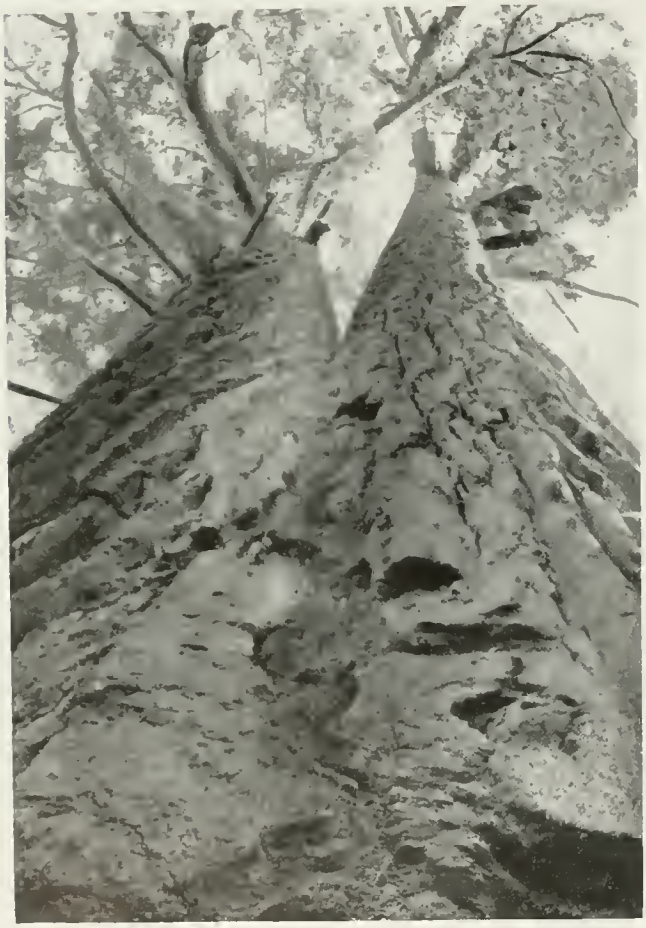
MARIPOSA: BIG TREE GROVE.

This, the Grizzly Giant, is the finest specimen of *Sequoia Gigantea*. It is situated in the Lower Grove of Mariposa and has a girth of ninety-four feet

smoke shadows over the surrounding country. This was followed by the slow cooling of the volcano. And as the years sped by, the rocks were beaten upon by storms, chiselled by snow and ice, and cracked and broken by atmospheric gases. More sand choked up the vent, and finally a small pool was formed in the crater which the rays of the sun seldom reach. Here the snows and rains of winter are stored and the supply lasts long into the year.

One peculiar effect of the geologic degradation of the cone is that the crater has become a tangled maze of aisles and corridors. But it is an uncanny place; the walls appear ready to crumble and fall and all sound is swallowed up in their porous substance. Should one call to his friend a little distance away, it is probable no sound would reach him, so soon are the vibrations absorbed in the rocks.



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THE FAITHFUL COUPLE, CALIFORNIA.

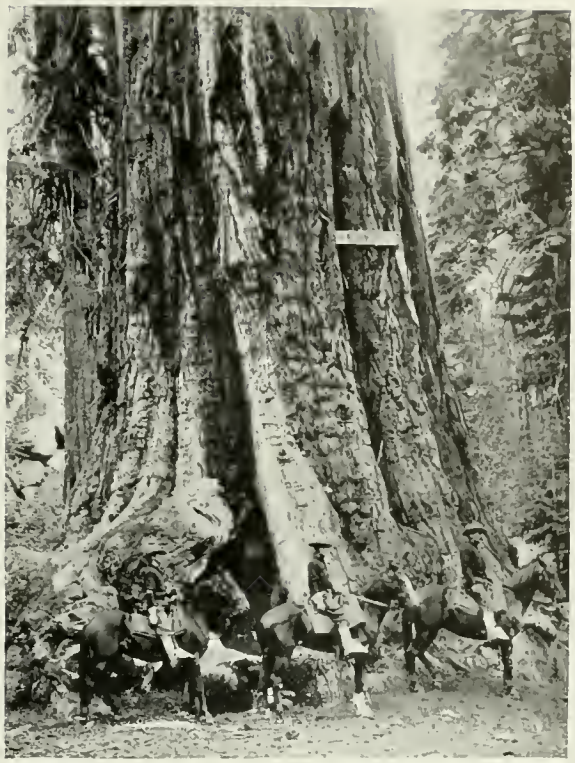
A view of twin trees, looking up their shaft. This giant and giantess of California are two distinct trees although united in trunk.

I have watched the wild animals of the desert water here—coyotes, foxes, skunks, antelopes, deer, bear, wild turkeys, cottontails and jack-rabbits—and they have shared its water with the roaming Indian for centuries, until at last the white man came, "filed" upon it, fenced it in and appropriated every drop of the water for his own use or that of his flocks and herds.

The Big Trees of California.—All the great poets of the world have sung of trees and forests, and all peoples have found delight in them. England has sung for a thousand years of its oaks, and I well remember going to see the monarch of Cranbourne Lodge, in Windsor Forest, the great oak that, if I remember aright, measured thirty or more feet around the base. The Norwegians have their tomarachs, firs, spruces and pines, the Australians their eucalyptus, the South Americans their mahogany, the Japanese their bamboo. But for majesty, age, size of height and girth, the world must pause in reverent adoration, all competition eliminated, before the *Sequoia Gigantea*—the big trees of California.

There are two varieties of these trees, and they are found nowhere else in the world, and each has marked habits that clearly distinguish them. The real big tree is the *gigantea*. It is found only on the western slopes of the Sierra Nevada, generally never below four thousand feet and seldom above six thousand five hundred feet above sea level.

The smaller variety of the big tree is the *sequoia sempervirens*, or everlasting redwood. This tree never wanders far from the coast. It is found in seven counties only, and never more than twenty to thirty miles from the sea. One reason for its name—and its brother the *sequoia gigantea* partakes of this same quality—is that it may be burned until every limb is severely scarred with fire—nay, until not a single limb remains upon it; yet such is the thickness and imperviousness of its bark,



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"Vermont" and "Wawona."

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[The Southern Pacific C

"Wawona"

BIG TREES IN THE MARIPOSA GROVE, CALIFORNIA

Photo by [*H. C. White Co.*

A BURIAL VAULT, MANILA, PHILIPPINE ISLANDS.

Burial in many parts of Southern America that have been influenced by Spanish rule is performed by placing the deceased in a numbered niche of a corridor or burial chamber. When the annual fee for the niche is no longer paid, the bones are cast into the common vault such as is seen here.

that in a year or two it will send out new shoots and thus, though apparently dead, spring back into newness of life.

The name *Sequoia* is from Sequoyah, who was a Cherokee Indian of mixed blood, better known by his English name of George Guess. He is supposed to have been born about 1770 in Will's Valley, in the north-eastern corner of Alabama, then occupied by the Cherokees. He was a man of great ability and invented an alphabet for his tribe and taught them to write it. When his tribe was driven beyond the Mississippi he went with his people, and died, in 1843, in New Mexico.

Out of the eight or nine groves of the *gigantea* visited by travellers, the ones easiest reached are the Mariposa and Calaveras Groves. The former is generally visited in conjunction with the trip to the Yosemite Valley, being in reality an easy side trip of one day from the Valley. The most attractive tree of all is the Grizzly Giant, the only solitary tree of any great age in the grove. It stands straight, solemn, unique, alone, without a branch for quite a height, then giving out a number, the diameter of some of which is fully six feet. It is ninety-three feet seven inches in circumference at the ground, and sixty-four feet three inches at eleven feet above. Its two diameters at the base are about thirty and thirty-one feet, while the estimated diameter at eleven feet high is twenty feet. It is much decreased from its original size by burning, and no allowance for this has been given in these measurements. While it seems to be hoary with old age, John Muir contends that it is merely a mature tree, for it ripens its cones with great regularity.

These cones are exceedingly beautiful, and very small for so large a tree, and the remarkable fact about them is that the seed is about the same in size and appearance as the seed of the parsnip.

Of the age of the big trees the most recent scientific authorities have made statements that are startling. We look upon the Pyramids and Sphinx as most ancient memorials, yet long before the time of the Pharaohs who built these wonderful structures the big trees were growing and were tall and strong. There are no known memorials of man so ancient as they, and nothing living can equal them in age. Indeed, David Starr Jordan, the President of the Leland Stanford, Jr., University of California, who is as learned a botanist and biologist as he is ichthyologist and college president, affirms that some of them are fully seven and even eight *thousand* years old.

The trunk of the big tree is columnar, fluted perpendicularly, and in appearance and colour varies from a very light brown to cinnamon. The older trees usually have little foliage for the first hundred feet, save feathery sprays. The rule is not absolute, however, and some of the larger trees,

especially those in exposed places, branch near the earth. The limbs reach an enormous size, one, eighty feet from the ground on the Grizzly Giant in the Mariposa Grove, having a diameter of nearly seven feet.

While the Mariposa Grove is the grove most visited owing to its close proximity to Yosemite, the other groves are well worth a visit, especially the Calaveras Grove and the recently discovered California Grove. This latter is commonly known as Redwood Mountain, and lies in a beautiful basin at the foot of Little Baldy Mountain, on gently sloping hillsides of easy access, and where there are hundreds of fine camping places near to the silvery streams where trout live in abundance. The government gaugers have counted over eight thousand *sequoia gigantea* in this grove alone.

The Calaveras Grove was long the principal grove visited, and hence in the literature on the subject written by travellers from other countries it is by far the oftenest described and is the best known. Here one certainly sees most wonderful trees, and the methods used to demonstrate their gigantic size make a deep impression upon the minds of all. It contains ten trees thirty feet in diameter and over seventy that are between fifteen and thirty feet.

One of the most interesting specimens is the fallen "Father of the Forest." Standing near its uprooted base the scene is grand beyond description. The "Father" has long since bowed his head in the dust, yet how stupendous he is even in his ruin! He measures one hundred and twelve feet in circumference at the base, and can be traced three hundred feet where the trunk was broken by falling against another tree; it here measures sixteen feet in diameter, and according to the average taper of the other trees this venerable giant must have been four hundred and fifty feet in height when standing. A hollow chamber or burnt cavity extends through the trunk two hundred feet, large enough for a person to ride through on a good-sized horse; near its base a never-failing spring of water is found.

Photo by] [The Detroit Photographic Co.

A TOTEM POLE IN SEATTLE, WASHINGTON

This fine specimen was brought from Alaska and erected in Pioneer Square

Ninety yards east is a cluster of three trees, one of them named after Thomas Starr King, the preacher patriot of California, and the two others after the eminent Englishmen, Richard Cobden and John Bright. The three nearest to the hotel were named after three noted Generals of the United States Army during the Civil War, U. S. Grant, W. T. Sherman and J. B. McPherson.

The "Miners' Cabin" was blown down in a terrific gale in November, 1860. It is three hundred and nineteen feet long and twenty-one and a half feet in diameter. Two hundred feet away are the "Three Graces," a group of three trees, close together in a straight line, and by many regarded as the most beautiful cluster in the grove.

THE POLAR SUN.

This photograph, taken during the expedition of Dr. Cook, clearly shows the iridescent halo that on certain occasions was observed to surround the sun; it was especially noticed after emerging from a fog or a bank of clouds.

There are "Sir Joseph Hooker," "John Lindley"—two noted English botanists, and near by, "Humboldt."

To merely catalogue all the trees of noticeable size and name would be to fill up several pages.

Of the *sequoia sempervirens* there are two groups constantly visited. One is a small privately owned grove on the line of the Southern Pacific to Santa Cruz, where a small entrance fee is charged, and the other is the "State Park," so called because it was purchased a few years ago by the State of California, so that a large number of these trees might be kept in their original condition for all time. It is located about twenty miles from Boulder Creek, a small town not far from Santa Cruz, and is under the control of the State Board of Forestry, which has advisory relations with the *Sempervirens Club*—a club organized for its public purchase and protection.

Burial in the Philippine Islands.—Many a volume could be written on the burial customs of the nations of the world, from the Hindoo habit of placing the bodies on the Towers of Silence, to the earth interment of the Christian and the cremation of the North American Indian. In Spain and Mexico and also in the Philippine Islands—doubtless introduced there by the Spanish missionaries—the habit prevails of placing the bodies in compartments in walls or vaults, each of which is numbered, the number corresponding to a register kept by the priest or sexton. The friends of the deceased are required to pay an annual rental for this "resting-place for the dead," and so long as this is done the body remains unmolested. But if, after a year or so, the rent remains unpaid, the body, by now generally reduced to bones and dust, is removed and incontinently thrown into a vault prepared for that purpose. To those of different custom, who see these piles of skulls and bones for the first time, this method of displacing the dead seems both heartless and sacrilegious, but to those who do it there is nothing strange or out of the way in it.

Mount Hood from Elliot Glacier.

A dangerous snow-bridge over a crevasse.

Photos by]

The gigantic ice-cliffs of the glacier.

[H. C. White Co.

One of the glaciers that imperil the way of the mountain-climber.

ELLIOT GLACIER, MOUNT HOOD, OREGON

Photo by] [*The Detroit Photographic Co.*

MOUNT HOOD, OREGON.

Mount Hood is the northernmost peak in Oregon of the Cascade Range. It possesses a lake of immense depth and of the purest water, which is protected by the Canyon of the Sandy River from contamination by the muddy glacier streams.

Everything in life—and, in this case, even afterwards—depends upon the angle at which one views things.

Totem Poles.—Earlier in this work was given a description of the origin and significance of the Totem, but a few words may with advantage be added here with regard to the symbolism of their elaborate carvings. As we have already seen, there were four kinds of totem: the clan, the family, the sex and the individual. The first symbol denoted the supposed origin of a particular tribe; for instance, the Eagle Clan claim descent from the monarch of the air, and, therefore, a carved eagle surmounts the tallest pole in their village. The second was the family symbol. Now, most of the family names of the North-American aborigines are those of birds, beasts, fishes, reptiles, or natural objects, so that the embodied name is usually not difficult to depict. The Thlinkits are divided into four totems: the whale, the eagle, the raven and the wolf. Should you pass through a village of the Thlinkits and be unaware of the exact family by whom it is inhabited, the totem pole will tell you if you be learned in the Indian folk-lore, for upon it will be carved the family emblem underneath that of the clan.

But perhaps the totem is a private coat-of-arms; then the third carving will show the sex of the owner. The sign will vary according to his or her tribe. But let us take a special example. The sex totems of the Thlinkits are, for a woman, the raven; for a man, the wolf. Then one of these two animals will figure on the private totem pole. Lastly, there is the individual totem. This is chosen by every man when he has attained the age of puberty and has undergone the long religious fasts demanded of him on his inclusion amongst the adult males of the tribe. These

fasts are a test of his powers of endurance and are very severe. Exhaustion often occurs, and the mind is then in the requisite state to see visions and dream dreams. If in these dreams a special animal appears to the dreamer, he will take it as his own peculiar emblem, and that will be carved on the fourth position on the pole. That is the history of the evolution of a totem pole. Many and varied are the devices to be met with, not only in North and West America, but in most ethnological museums, for transportation has made this curious architecture familiar to the world. In one instance a pole was adorned with a succession of bears; in another, three halibuts; and yet another had as its topmost carving the figure of a man in a conical hat. But grotesque and humorous though these carvings may appear, it ought to be remembered that a whole system of primitive religion and morals underlies this strange sculpture, and that the totem pole is a subject capable of affording vastly interesting study.

The Polar Sun.—All are familiar with the Polar Day and the long Polar Night, but the majority of people assume that the sun, during the period of its constant shining, presents the same appearance as that with which they are familiar. This is a great error. The peculiar magnetic, electric and meteorological combinations affect the atmosphere surrounding the earth, so that man's vision of the sun is materially altered. When the thermometer ranges from twenty to forty, fifty and even sixty degrees below zero, and the sky is overcast with fog, or heavy falls of snow, or dense clouds, and the heavens are constantly subjected to brilliant electric displays, the appearances of the sun can better be imagined than described. Here are a few brief word-pictures made by Commander Cagni, of the Duke of the Abruzzi's expedition on the *Polar Star* to the Arctic Sea (June, 1899, to September, 1900). On the evening of Wednesday, April 11, "At four o'clock, the sky became clear for a moment, and the sun appeared with a splendid halo—blue, green, yellow and red; and a secondary halo—green, yellow and red." On Monday, April 2, another detachment of the expedition reported that "At noon we set out in perfectly calm weather. A fog completely envelops us and prevents us from seeing far. Yesterday's fall of snow has effaced our tracks and left a layer of soft snow, into which the sledges sink. . . . The fog lifts at three, and the sun appears for a moment, with a large and splendid iridescent halo which has a luminous body on the top." April 10: "At one o'clock the star of day appeared, surrounded by a magnificent halo, the most beautiful I have ever seen. It is a circle of light, shining with all the colours of the prism, divided by a horizontal diameter, with two parhelions at its extremities, making three suns on the same line. There is a large luminous body in contact with the upper limb."

Mount Hood is eleven thousand two hundred feet above sea level and forms one of a group of peaks all of which can be clearly seen from Portland. In succession there are Mount St. Helens, the Three Sisters, Mount Jefferson and Mount Adams, while at a distance of about one hundred and forty miles is Mount Tacoma-Ranier.

Photo by [*The Detroit Photographic Co.*

WEBER CANYON, UTAH.

The Devil's Slide in this canyon is composed of two remarkable parallel strata of sandstone ascending the steep slope of the south wall for about 2,000 feet.

Mount Hood is the northernmost peak in Oregon of the Cascade Range. This range, which the geologists generally regard as a continuation of the Sierra Nevada of California, is a broad volcanic plateau, with an average height of six thousand feet, from which soar many peaks from nine thousand to eleven thousand feet above the sea. It really divides Oregon and Washington into two parts—the eastern and western divisions being climatically very different from each other, and thus having a marked influence upon the agriculture. The mountain itself is reached by stage of about forty miles from Hood River station, and here are fields of exploration that even to-day invite the adventurous. Glaciers, crevasses and moraines on Mount Hood are yet to be explored and mapped out, and one may revel here in scenery as untouched by the foot of man as any known in the world.

Photo by] [*The Detroit Photographic Co.*

"THE OLD MAN OF THE MOUNTAINS."

This strange crag, which juts out from the side of Cannon or Profile Mount in the "Franconia Notch" of the White Mountains, has been immortalized by Hawthorne in his "Twice-told Tales."

The Devil's Slide, Weber Canyon, Utah.—The Union Pacific Railway, reaching from Omaha to Ogden, where it joins the Southern Pacific (once known as the Central Pacific), for San Francisco, passes through wonderfully diversified scenery. After rolling over the buffalo plains at about the same level for hundreds of miles, it ascends the Rockies, passes the summit and slides down to the plateaus of the Colorado and Utah country. These plateaus are seamed here and there with most picturesque and rugged canyons, one of the most interesting of which is Weber Canyon. It is preceded by Echo Canyon, wild and fantastic, whose walls are nearer together than are those of Weber Canyon. Here are pulpit rocks, fantastic carvings and wild spires ascending into the pure blue of the western sky, from massive domes, cathedral rocks and castellated towers. One of the most imposing features is the Devil's Slide, consisting of two parallel dykes or strata of sandstone, about thirty feet apart, and ascending the steep slope of the south wall of the canyon for about one thousand five hundred to two thousand feet. The name is somewhat fanciful, suggested by its largeness and ruggedness, and that it does somewhat appear as if some weird and wild being had used it as a passage-way from the cliffs above to the level beneath.

The Old Man of the Mountains, Franconia Notch, White Mountains, New Hampshire.—Until the Rocky Mountains and the Sierra Nevadas were opened up to the tourist, the White Mountain region of New Hampshire was by far the most popular of all America's wonder spots. For many years a railway has conveyed passengers to the top of Mount Washington (six thousand six hundred feet) during the summer months. Three distinct passes afford ingress and egress to certain valleys, and those passes which in this range are known as "Notches." The easternmost of the passes

Photo by] [*The Detroit Photographic Co.*

THE LIBRARY OF CONGRESS, WASHINGTON.

This magnificent building, in the Italian Renaissance style, was erected in 1888-97 at a cost of over six million dollars. The interior is sumptuously decorated with rare marbles and brilliant paintings, which include works by America's most eminent artists.

Photo by] *[Underwood & Underwood.*

THE MAMMOTH CAVE, KENTUCKY.

Stalactitic formations are not abundant in these caves, but such as are found here are of great size and beauty. Those here shown are to be seen in Pilgrim Avenue

is the Franconia Notch, through which the Pemigewasset river flows. One of the mountains that borders this notch is Mount Cannon, so called on account of a group of rocks at its summit which at a distance bear an exact resemblance to a mighty cannon.

On this mountain, about twelve hundred to fifteen hundred feet above the road, though far below the summit, appears a "Great Stone Face," the "Old Man of the Mountains," that bears so striking a resemblance to a human face that Hawthorne, in his "Twice-told Tales," has not only given us a vivid description of it, but has woven a legend and moral around it. He thus describes it: "It seemed as if an enormous giant, or Titan, had sculptured his own likeness on the precipice. There was the broad arch of the forehead, a hundred feet in height; the nose, with its long bridge; and the vast lips, which, if they could have spoken, would have rolled their thunder accents from one end of the valley to the other." Thomas Starr King, commenting on this, said: "We must reduce the scale of the charming story-teller's description. The whole profile is about eighty feet in length; and of the three separate masses of rock which are combined in its composition, one forms the forehead, another the nose and upper lips, and the third the chin. Perhaps the best time to see the profile is about four in the afternoon of a summer day."

The Congressional Library Building, Washington, D. C.—While called the Library of Congress, this is really the National Library of the United States. It is located close to the National Capitol, for the use of the President, the Senators and Congressmen, judges and officials, and any American citizen who may need to use its vast collection of books to aid him in his researches in any of the multitude of subjects which interest mankind.

The new library was completed in 1897. It is an imposing building, situated on the eastern heights of the city of Washington, directly opposite the east front of the Capitol, and surmounted by a golden dome, reaching about one-third the height of the Washington Monument. This is second in size only to St. Isaac's, of Russia—the largest gilded dome in the world.

It covers about four acres, is constructed of New Hampshire granite, and its foundation walls are as solid as the enduring rock on which they are placed. Dignity and use rather than ornateness and show were the watchwords of the architects, though in the detail and ornamentation it must be confessed the library goes far beyond any of the older public buildings of the National Capitol. General Casey, the national architect, who, with his assistants, designed the building, was necessarily

handicapped in his plans at the start, for whatever he did must be subordinate to the National Capitol and in perfect harmony with it both in style and appearance.

The main entrance is by three arched doorways, side by side, leading into a magnificent and spacious entrance hall, lined with highly-polished marble. Two flights of marble stairs lead upwards to the right and left, guarded by balustrades carved in high relief, representing a succession of cherubs who symbolize science, art, industry, and the many professions and pursuits of man.

Directly opposite the entrance doors and midway between the two flights of stairs is an impressive portal of white marble, like a triumphal arch, leading to the rotunda, the floor space of which is occupied as a reading-room.

This rotunda is practically the centre of the building, and it is flanked on the north and south by two halls, each containing an enormous book-stack of iron and marble reaching up nine stories and either capable of holding a million volumes. The windows of these book-chambers look into four large courts, which are enclosed by the outer wall of the building. A lofty corridor, with offices, small reading-rooms, etc., opening into it, runs around the vast square of the entire building, its walls faced high with polished marble from the different States.

The reading room is octagonal in shape and a hundred feet in diameter. Its ceiling is one hundred and twenty-five feet above the mosaic pavement. Each of the eight sides is guarded by a splendid archway of Sienese marble, its incomparable mellow yellow tints veined in black. At each bend of the octagon stand colossal polished columns of red African marble, as warm and glowing as a Nile sunset. It is a gorgeous temple of learning, by far the most ornate building in America.

Photo by] [*Underwood & Underwood.*

THE HEAD OF ECHO RIVER, MAMMOTH CAVE

This river flows along in the darkness of these caverns for an unknown distance, for the cave and its avenues can only be estimated to extend for at least one hundred miles.

The Mammoth Cave of Kentucky.—For over a century the Mammoth Cave of Kentucky has been one of the wonders of the world. In Edmonson County, where the Mammoth Cave is found, there are as many as five hundred well-known and explored caverns.

The reason for this is that the plateau of this country is surfaced with a layer of homogeneous limestone of the sub-carboniferous period, several hundred feet thick, with no intervening strata. For over a hundred miles there are but three rivers—the Wolin, Green and Barren—and between these rivers the whole of the surface drainage passes away through subterranean channels, giving rise to a curious " sink-hole " topography, which has its counterpart on the north rim of the Grand Canyon on the Kaibab Plateau. Much of the water gathered in these sink-holes escapes through vents in the bottoms into caverns and underground rivers, cutting and carving on its way to join the rivers beyond—one of which, the Green, is fully three hundred and twenty feet below the level country above. Of this three hundred and twenty feet, seventy is sandstone, and two hundred and fifty feet limestone, and it is in this limestone that the caves are found.

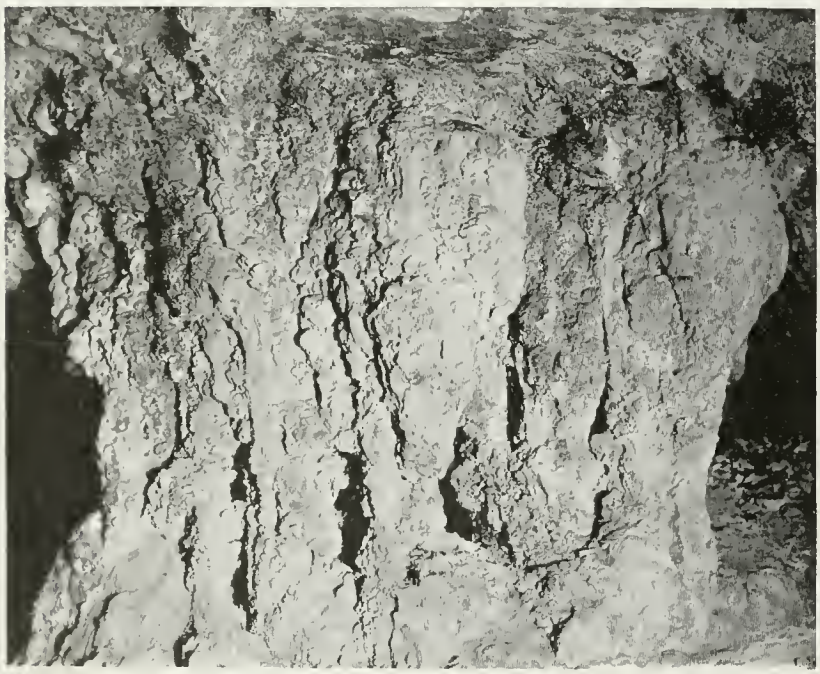

Photo by] [Underwood & Underwood.

THE PILLARS OF HERCULES, MAMMOTH CAVE.

One of the giant stalactites to be found in these caves.

Every vent hole of the sinks aids in the making of underground channels and caverns, and there is no estimating the thousands of miles these extend. Nor is it possible to more than guess at the extent and number of large caverns yet undiscovered.

But a building-up action is going on as well as a disintegrating action. In passing through the limestone the water becomes charged with lime, which it deposits elsewhere in the form of stalactites and stalagmites of a hundred varied designs. In the upper portion of the limestone, also, a quantity of pyrites of iron is found, and through the agency of moisture and air upon these and the limestone, sulphate of lime, or gypsum, is formed, and the gypsum crystals incrust the walls and ceilings in the upper and drier portions of the cave with beautiful and fantastic forms of sparkling white. These gypsum formations grow out of the rock as hoar-frost grows out of the ground.

Another strangely beautiful scene is exhibited in the Star Chamber, a hall seventy feet wide, sixty feet high and five hundred feet long. The lofty ceiling is coated with black gypsum, studded with thousands of white spots.

Passing through majestic avenues and chambers, we approach Chief City, so-called because there are a number of rocks that appear like ruins, and also because of the vast dome where the Indians used to congregate before the day of the whites. This stupendous dome is five hundred feet across in one direction, two hundred and eighty feet in another, and its height is estimated at from ninety to one hundred and twenty-five feet. Over this great area extends a solid arch of limestone.

Not far away is Flint Dome, where bands and nodules of flint project from the circular walls.

[Underwood & Underwood.

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MONUMENT PARK, COLORADO.

The eroded sandstone pillars of this district are remarkable for their dark caps, which are formed by a stratum of much firmer sandstone capable of withstanding erosion better than the more friable base.

Photo by] *[The Detroit Photographic Co.*

SUNRISE FROM PIKE'S PEAK.

The effects of the sunrise from this lofty peak of the Rocky Mountains are of extreme beauty, especially when a white mountain fog hides away the lesser peaks and the valleys beneath.

The Indians used to gather flint from here, as in its moist condition it would "flake" much easier than the dry flint outside.

Mammoth Dome is the largest of the three vast domes in this cave, and is about four hundred feet in length and one hundred and fifty feet in height and as much in width. The walls are curtained by alabaster drapery in vertical folds, varying in size from a pipe-stem to a saw-log, and decorated by heavy fringes at intervals of about twenty feet. Six enormous columns, eighty feet high and about twenty-five feet in diameter, support one of the circular sides of the roof. These columns are fluted, and have well-marked capitals, and look like the ruins of some immense Egyptian temple. The white limestone is here incrusted with an amber-coloured stalagmitic coating, and curtains of the same material add greatly to the splendour of the place. The floor is paved with stalagmitic blocks, stained by red and black oxides into a kind of mosaic.

Though the main passages are wide and impress the beholder with their grandeur and majesty, there is one winding, narrow, water-worn passage whose three hundred feet or more change direction eight times. The width of the passage is but eighteen inches, and it is called the Fat Man's Misery, from which one emerges to the Great Relief. From this we enter one of the grandest avenues in the cave, called River Hall, extending for several miles, and leading, with its ramifications, to the wonderful subterranean lakes and rivers. Passing along the narrow ledge of the dark cliffs overhanging the Dead Sea, where the guide skilfully throws the lights on to projecting ledges of the farther side, we still cannot see the clear pool of water below into which we can hear the near-by cascade falling. We cross a stone archway forming for several hundred feet a natural bridge over the River Styx. Then after passing the side of Lake Lethe, we enter the Great Walk, a spacious avenue, ninety feet high, and extending twelve hundred feet to the shore of Echo River. We now take to the boats, flat-bottomed and commodious, each one seating about twenty persons. The

lamps are arranged at each end. It certainly is a most uncanny sensation to find oneself afloat under the dark archway in this world of blackness and gloom. It is three-quarters of a mile to the other side. The river is about twenty feet deep, but the water is so clear that one can easily see the pebbles at the bottom.

Suddenly the guide asks for silence. Then lifting his heavy, broad paddle, he strikes with great force the surface of the water. Instantaneously one is in the presence of a thunder-storm that he cannot see. Waves of sound of immense volume are let loose and come rolling in from every direction, receding, and again returning, lingering for many seconds, and finally dying away in sweet, far-away melodies.

This underground river is the home of the eyeless fish and of an eyeless crayfish, both of which have no colour, and are remarkably provided with sensitive tissue under the skin which answers the purpose of eyes.

There are scores of other objects of interest which one should visit, but which this brief sketch necessarily cannot include. One of the most remarkable features of the trip, however, is often experienced at its close. On returning to the outer air, it seems so heavy, so mephitic with odours of one kind or another, after the pure air of the cave, that many people struggle for breath for a short time, returning again and yet again to the cave, before they become fully accustomed once more to their normal air. This is one of the great charms of an exploration of the cave. The air is so pure and exhilarating that one can walk miles and miles without fatigue.

Photo by] [*The Detroit Photographic Co.*

THE MESA ENCANTADA FROM THE PUEBLO OF ACOMA.

This pueblo is one of the most modern, dating from 1699. The Acomas assert that their ancestors lived on the "Enchanted Tableland" (as "Mesa Encantada" signifies), and investigation has verified their claim.

Photo by] [*The Detroit Photographic Co.*

THE RAIN-DANCE IN THE PUEBLO OF ACOMA.

Not only is the ceremony a prayer for rain but it is also a dance of thanksgiving. It combines the relics of the old pagan worship of the Indians with the religion taught them by the Christian padres. The dance continues with its peculiar rhythmic motion for hours together.

Monument Park, Colorado.—The descriptions already given of the Garden of the Gods are in some measure appropriate to Monument Canyon, although striking differences are to be noticed by the careful observer. Until travel was diverted to the Garden of the Gods this was the popular locality in Colorado.

Imagine a great number of gigantic sugar-loaves, quite irregular in shape, but all possessing the tapering form, varying in height from six feet to fifty feet, with each loaf capped by a flat stone of much darker colour than the loaf, and having a shape not unlike a college student's mortar-board—such is Monument Park. The capping stones are all that remain of a later deposition of sandstone, which is somewhat harder and more durable than the whiter sandstone beneath. Consequently, as the lower stratum has been eroded, these caps have preserved the various columns from extinction, though the beating rain, wind and snow have continued to gnaw them under the protecting shelter of the caps. The monuments are for the most part ranged along the low hills on each side of the park, which is about a mile wide, but here and there one stands in the open plain. There are two or three small knolls apart from the hills; and on these several clusters of the columns are found, presenting an appearance, at a slight distance, very like that of the white marble columns so often found in cemeteries.

Photo by] [*George Wharton James.*

THE ROCK-PILLAR AT ACOMA.

Sunrise from Pike's Peak.—This peak is amongst the best known heights of the Rocky Mountains, and though many travellers scale its steep flanks, few have watched a sunrise from its lofty summit. It is a sight of surpassing beauty, more especially when a white fog spreads over lake and valley below. These fogs are of frequent occurrence, and as one looks down upon the white mass it is as though a limitless sea, broken up into fleecy billows, were lapping the mountain side with its noiseless waters. The faint light of dawn gives tints of pearl to the moving expanse, and as the sun's strength each moment increases, the colouring changes and deepens; the sky above is charged with rose and crimson, and the ethereal lake reflects the glow. With the full warmth of day the mountain fog is dispersed and soft illusion gives place to majestic reality.

Acoma.—Of all the picturesque sites for a people the Acomas seem to have chosen the best. Their village is perched high on a wonderful "penyol"—an island of rock, isolated, however, with sand instead of water—in the plain, some twenty miles south of Laguna. When they first went there it is impossible to tell; but, whenever it was, it was at a time when defence was needed. So they chose this site because there was no way to reach it save up a dizzy trail which

climbed part of the way up the face of the cliff. According to tradition, the Acomas came from the far-away north, and their first recorded village was Kashka-chuti. Here they dwelt for a long time, until "the urge" sent them further south to Washpashuka, where they remained until another southward impulse brought them to Kuchtya. The sites of none of these towns are known even to their oldest and wisest men. But finally they reached the land where they dwell at the present time. They dot New Mexico all over, also parts of Arizona, and nowhere are they more attractive and striking than in the region north and south of Laguna.

When the travelling ancestors of the Acomas reached this land, they reared the walls of Tsiama at the gateway of a half-canyon, afterwards named by the Spaniards the Canyada de la Cruz. But even here they did not linger long. A more attractive site was found at Tapitsiama, a great mesa overlooking the Acoma valley from the north-east. Still another change was made, and this was to Katzimo—the accursed—the mighty rock from which Those Above drove them in most

Photo by] [*George Wharton James.*

A NATURAL BRIDGE AND TOWERS, ACOMA.

dramatic manner. Or, at least, they allowed them to leave and then forbade their return by making re-ascent impossible. The mesa itself is passed on the way from Laguna to Acoma. It is in a valley of cliffs, pink, grey, creamy, with occasionally a touch of orange, crimson and olive, but here was a detached mass, left solitary, alone, dignified, in the heart of the valley. It towered majestically above the tiny "pinions" at its base, though some masses of talus were piled more than thigh-high at the foot of the cliffs. The walls are seamed and scarred with many a storm.

While Acoma was originally difficult of access, Katzimo was far more so, for there was but one trail to the summit, and that for part of the way was up a huge section of rock that had been separated from the main wall by the action of the weather during the centuries.

One day, when all the people, save three old sick women and two or three lads left to take care of them, were away working in their fields, a fierce storm came and soon literally made the penyol an island. The water made a second flood and ultimately washed away the sand that held the rock-sliver in place. It fell with a crash and thus deprived the Acomas of any mode of access to their former homes. This they discovered when they returned, and from that time forward the

place was accursed to them; for not only were they kept from it, but their unfortunate kinswomen were unable to descend, and ultimately starved to death there.

Acoma itself is three miles from the enchanted mesa, and its approach is equally impressive. Many a time I have visited its fascinating heights, and each time with increasing pleasure. On one occasion I and several friends went with Padre George J. Juillard, their priest, who three or four times a year visits them, hears confession, says Mass, and generally consoles and advises with them.

At the foot of the trail our horses were unharnessed and unsaddled and taken away by some of the Acomas. Our Indian friends went ahead of us, and we soon saw them scaling an absolutely precipitous cliff—in the heart of a cleft—like flies on a wall.

We soon found we had to follow, but it was so planned that there was some friendly hand to help each of us at the critical places. First of all, the trail was a series of steps of rock and tree-trunks until we were well up in the heart of the cleft; then our fingers were guided into little hand-holes and our feet put into foot-holes, and for about ten feet we had to climb up a sheer wall. We were helped so handily and so surely that we all reached the top with no more than a few extra heart-beats and a sharp sigh or two. Then we entered a rocky tunnel, and on emerging on the other side we were actually on the top of the mesa on which stands Acoma.

The superficial area of this rocky table is seventy acres, and it is perched nearly three hundred and sixty feet above the surrounding sands. The walls are carved into a thousand and one forms, strange, fantastic, top-heavy statues of rude and grotesque outline. Narrow clefts, ravines, chasms, in which are hidden standing rocks, balanced rocks, pillar rocks, and some of which are spanned by natural bridges of massive outline, that dwarf the most ponderous of man's efforts of this kind. There are scores of massive mural faces, the tops of which are nature-shaped into towers, pinnacles, columns, domes, minarets and rude spires. We saw sheep corrals made by fencing in the entrance of a *cul-de-sac*, whose walls towered hundreds of feet into the blue sky. Near by was one formed by surrounding a standing rock-pillar with a fence, which just at sunset cast a shadow upon the sand, strangely and startlingly, like a sleeping giant of unearthly proportion

[Photo by] [George Wharton James.

THE TRAIL, ACOMA.

The view looking from the tunnel. This immense mesa covers an area of about seventy acres, and everywhere curious and fantastic rocks tower above the surrounding level.

Like all Indians, the Acomas indulge in many sacred dances. Most of these dances are a

strange commingling of their old pagan ceremonies—Nature worship—and those taught them by the Christian padres. Let me describe this as I have several times seen it.

Leading the procession came a peculiar figure. It was a man riding a kind of "hobby-horse." This represented St. James, the patron saint of Spain, a figure often seen in the ceremonies of the New Mexico Indians. Then, more peculiar even than Saint James, was a tall Mexican, dressed in cowboy fashion, wielding a large accordion and playing with earnestness and vigour. By his side was another Mexican. This latter had evidently taken full charge of the ceremonies. His wand of office was a vicious-looking blacksnake whip, with which every now and again he fiercely beat the air. Then behind a large crowd of Mexican visitors came a stalwart Acoma Indian bearing the processional cross; then the Governor and his officers, followed by the priest in his robes of office. Behind him seated in a cabinet evidently made for the purpose and borne aloft over the heads of

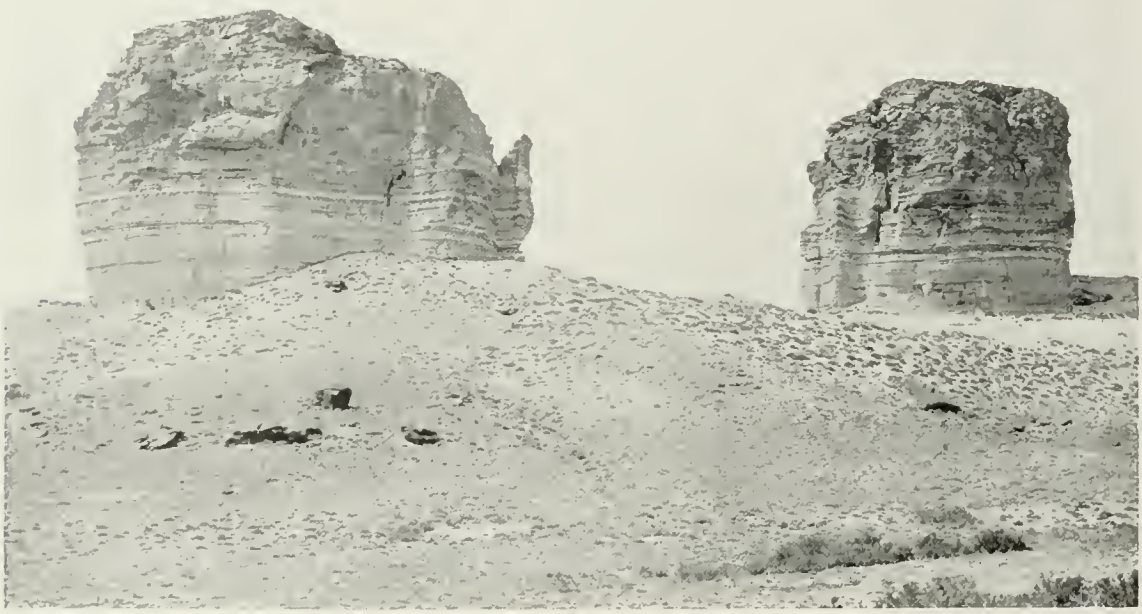


Photo by] *[The Detroit Photographic Co.*

SANDSTONE CARVINGS, GREEN RIVER, WYOMING.

These red sandstone cliffs have lent themselves readily to the curious sculpture of the sand-laden blast "The Old Maid's Teapot" and "Thor's Club" are the titles of these two rock masses.

the bearers, was the wooden figure of St. Stephen, taken down from its place over the altar. Over the figure of the saint a cloth canopy was held, the four corners of which were supported by staffs in the hands of four men. Then came the band of singers and the whole of the population, men, women and children. This procession solemnly wended its way up and down every street of the pueblo.

In one of the main streets a small *ramada*, or shelter, had been built, inside which the figure of St. Stephen was placed, forming part of the rude altar which had already been prepared. Having thus escorted the figure of the saint to his shrine for the day, the procession now disbanded.

During the rest of the morning all the devout members of the tribe, men and women, came to pray at the little shrine, each one bringing some gift-offering of bread, baked meat, clothing, pottery, corn, melons, jewellery, or other article, all of which are deposited around the foot of the altar and left there.

Soon after the noon hour the dances began, and it required no explanation to see that these were

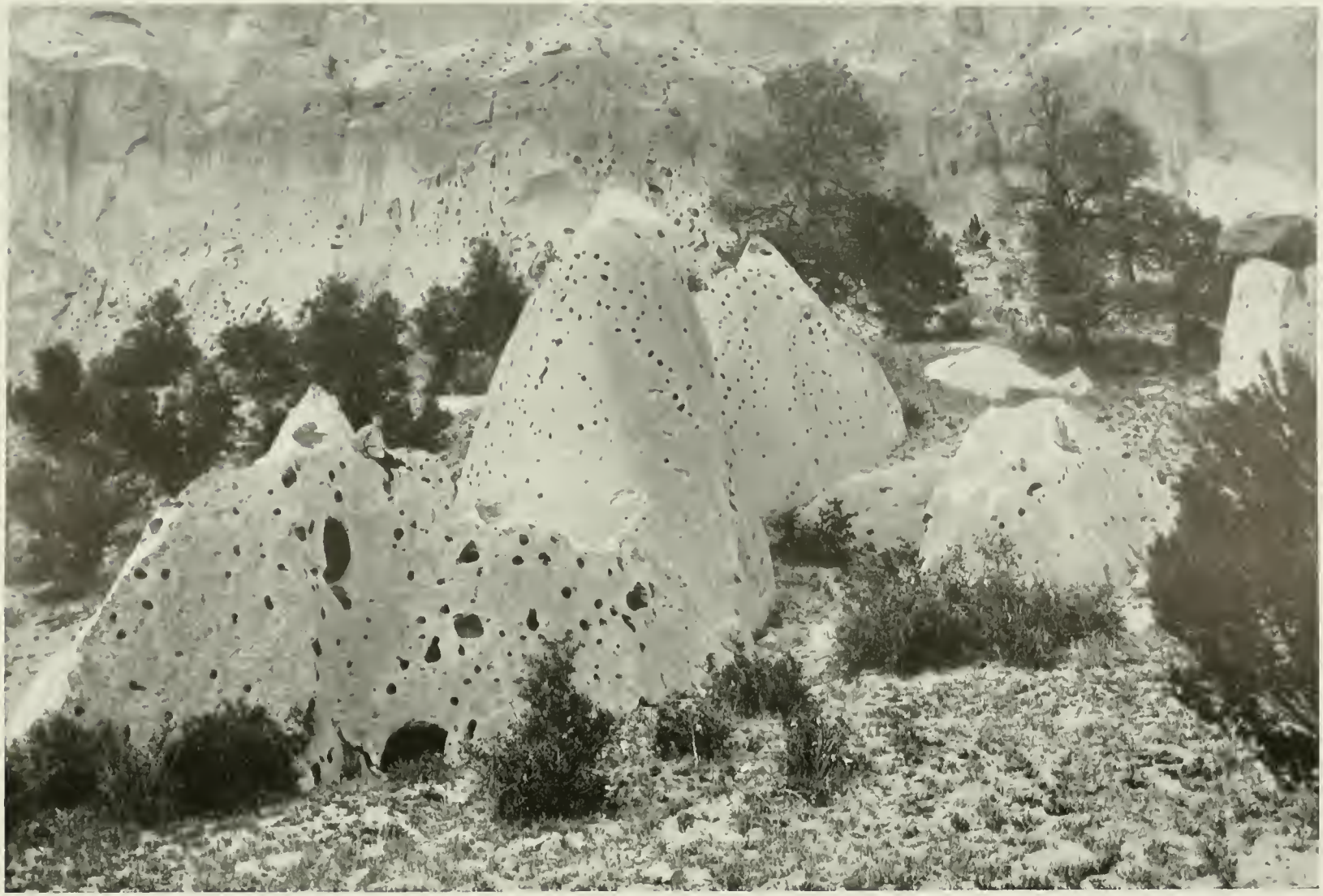


Photo by] [*George Wharton James.*

THE CAVE DWELLINGS, PAJARITO PARK.

In this cliff are three kinds of dwellings: (1) Simple caves, (2) excavated caves with porches, (3) houses of stone. This cliff, as the illustration shows, is literally honeycombed with habitations.

a remnant of the old heathen part of the ceremonies upon which the civilized and Christian part had been grafted. The head-dresses of the women clearly symbolized the old-time Acoma worship of the sun. The other symbols and the words of the songs which were sung showed that some of the dances were the ancient thanksgiving dances for the good things the people had received at the hands of Those Above, and also a prayer for rain. The men wore a kilt, or apron, reaching from the loins to the knees, embroidered and fringed garters and moccasins. Dependent from the loins at the back was the skin of the silver-grey fox, and around both arms above the elbow were tied twigs of juniper or pine. In the left hand more twigs were held, while in the right was the whitewashed gourd-rattle used in all ceremonial dances. Around each forehead was the inevitable handkerchief, and nearly all wore a shell and turquoise necklace. Their bodies and legs were nude, painted with an oxide of iron. The women, on the other hand, were bedecked with all the gorgeous finery they could muster. To and fro they danced, the men, two together, giving the singular hippety-hop movement peculiar to Indian dances, and shaking their rattles, the women, likewise in twos, following in alternate order, gently waving bunches of wild flowers, and shuffling forward with their feet as the men hopped. On the other side of the street stood the *tombés* (drums) and the chorus, the leader occasionally making gestures, all of which were imitated by the singers, expressive of their thankfulness to Those Above.

Altogether, as if they were controlled by machinery, each man-dancer raises his right foot with a quick jerk to the height of eight or ten inches above the ground. The next moment, but all in

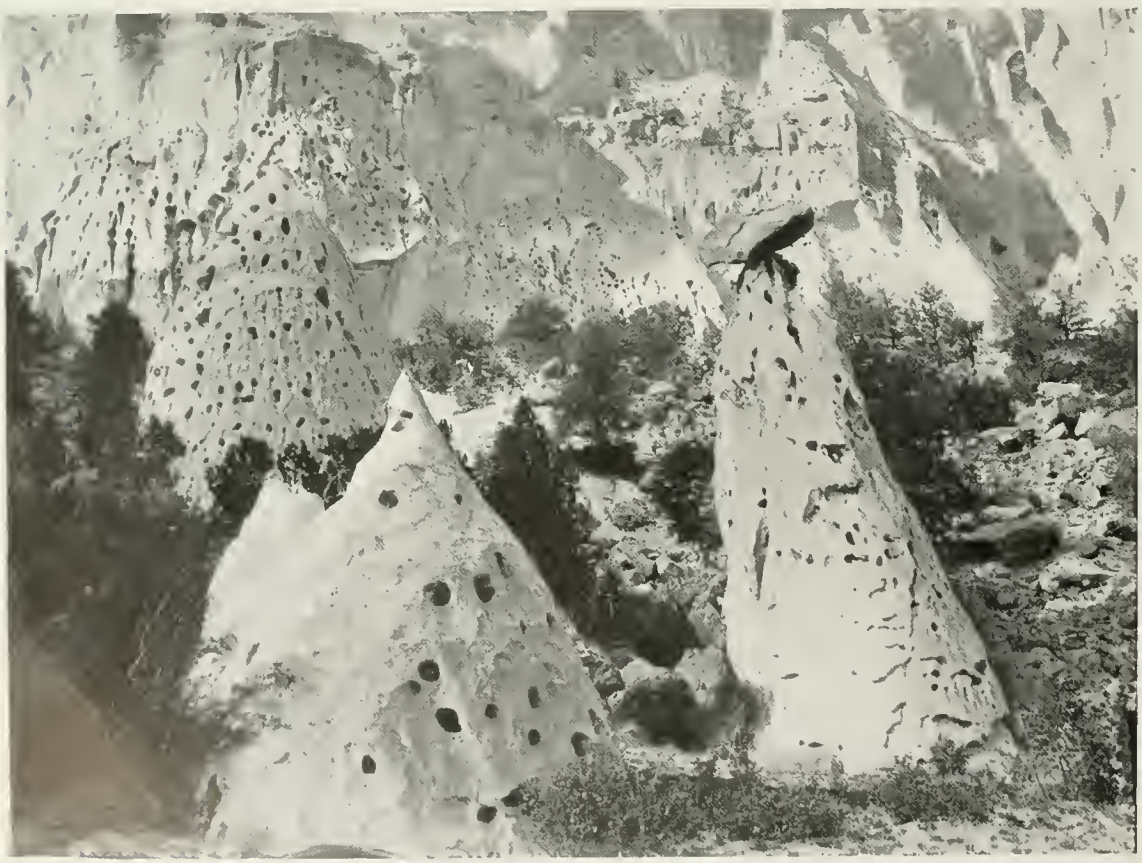


Photo by] [*George Wharton James.*

THE CAVE DWELLINGS, PAJARITO PARK.

The whole population of a tribe sheltered in these curious dwellings, and there is evidence that the surrounding country was covered with similar villages.

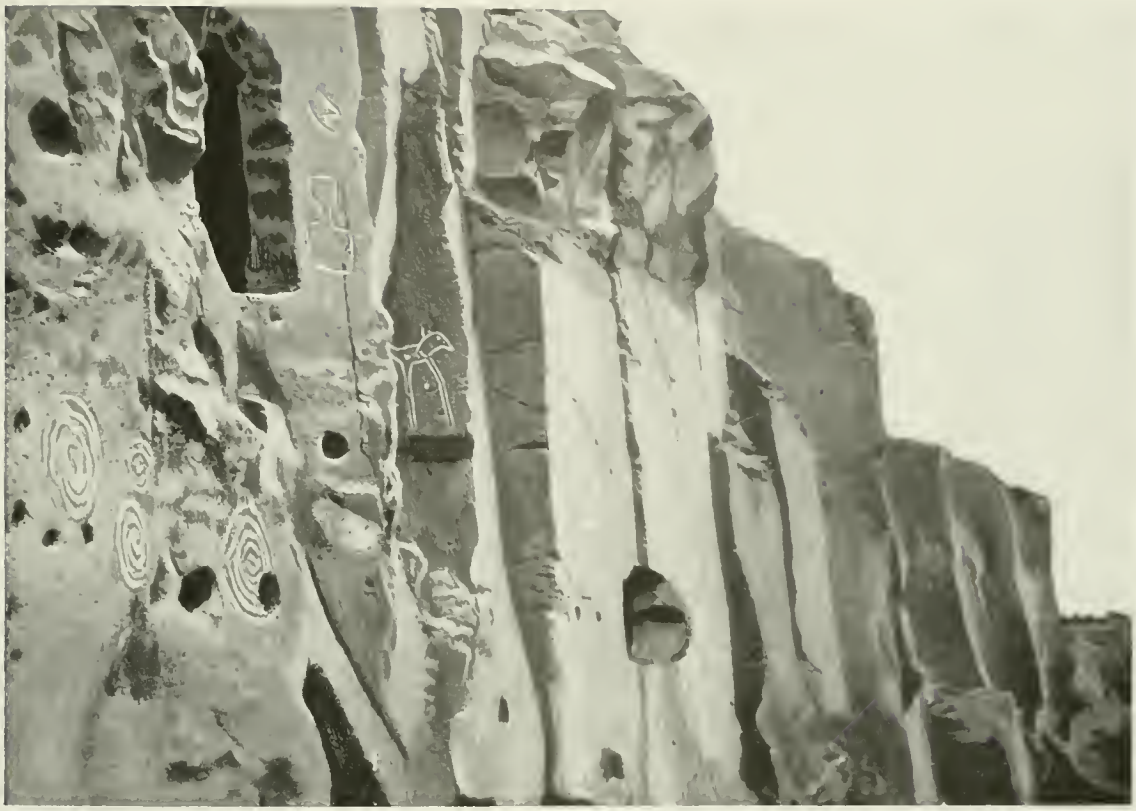


Photo by] [*George Wharton James.*

THE TUFA ROCK DWELLINGS, PAJARITO PARK.

Near by these dwellings is one of the few carvings extant of these primitive people. It is the "Shrine of Makatch," decorated with two carved lions; but this cave shows the highest stage in purely secular ornamentation.

time, he gives a tiny hitch forward or hop with his left foot, while the right foot is suspended in the air. Then bringing the right foot down, he lifts his left foot with the same quick jerk, following the movement with the tiny hop of the right foot. It is this little and almost imperceptible hop, following the main step, that gives the peculiar character to the Indian's dances. As the afternoon progressed and the fervour of the dancers increased, the step became higher and more vigorous and the little hitch of the other foot more marked.

The dancing was kept up until near the time of the setting sun.

Sandstone and Concrete Carvings, Green River, Wyoming.—Sculpturing of the rocks is one of Nature's great amusements. She works in a thousand different ways. The wind, charged with sand, is often one of her powerful chisels, but the gases of the atmosphere are just as potent. On the Green River in Wyoming the red sandstone formations have lent themselves to a wonderful variety of shapes in this workshop of fantastic sculpturing. As it was deposited this sandstone settled in irregular density and consequent varying degrees of hardness. When the strata were uncovered and the process of degradation began, the harder masses resisted the encroachments of the weather, and little by little assumed the amusing and fantastic forms in which they now appear. Necessarily they look different at different angles, hence it depends upon the point from which they are photographed as to what they are called. In the accompanying engravings are the "Old Maid's Teapot," a gigantic representation of the source of the maiden lady's comfort, and the other is a club which might have been used by the God Thor in one of his berserker rages when he sought to slay his enemies. There are scores of these peculiar formations varying in size from a foot or so to others which are a hundred or more feet high and many hundreds of feet in diameter.

Puyé Cliff Dwellings, New Mexico.—Just as the Mesa Verde and the Canyon de Chelly cover large areas of diverse ruins of a prehistoric culture, so does the Jemez (pronounced "Hay-meth") Plateau in New Mexico. It is a name applied to the northern central part of New Mexico, on the west side of the Rio Grande del Norte. It extends from a point almost directly west of Santa Fé to the Colorado line, a distance of about ninety miles. It is limited on the west by the Rio Puerco, and has an extreme breadth of about sixty miles.

One important section of the Jemez Plateau has been called the Pajarito Plateau, and in this division the most interesting series of ruins are those of the settlement known as Puyé. This consisted of a large pueblo on the top of the Puyé Mesa, and an extensive tributary cliff village. The

Photo by] *[George Wharton James.*

CLIFF DWELLINGS AT PUYÉ.

The Puyé Mesa is situated on the Pajarito division of the Jemez Plateau of New Mexico. The cliffs in which the dwellings are situated are of greyish-yellow tufa, a rock that is easily excavated and therefore suitable for the cave dwellers.

pueblo was a huge quadrangular structure, the second largest in the region, and the most regular and compact of all the greater ruins. It had but one entrance, this being in the eastern side, near the south-eastern corner. The four sides are so connected as to form practically one structure. In some rooms of this building there are evidences of occupancy after once having been abandoned. Doors and windows previously used are found closed with masonry and plastered over. The last floor is laid upon a foot or more of débris accumulated upon an original floor and not removed in the process of remodelling. The cliff-village of Puyé was an extensive one. The Puyé Mesa, in the cliffs of which the dwellings occur, is a mass of greyish-yellow tufa, about a mile long and varying in width from ninety to seven hundred feet. This tufa has been much worn during the ages by water and wind erosion, so that it especially lent itself to the making of the cliff-dwellings, which are one of the distinctive features of these ancient settlements.

by the Photochrom Co., Ltd.

THE HOT SPRING, YELLOWSTONE LAKE, YELLOWSTONE PARK.

One of the 70 springs that form the Hot Spring basin of Yellowstone Park is surrounded by the waters of this vast lake, so that the fisher, standing on the geyser's cone, is in the unique position of being able to catch his trout, then cook him in the boiling cauldron nature has provided

Photo by] [*The Detroit Photographic Co.*

THE GRAND CANYON, YELLOWSTONE PARK.

These are not simple grey and hoary depths and reaches and pinnacles of sullen rock. The whole gorge flames as if some glorious sunset had stained the cliffs with its pageant of brilliant colour

Photo by [*Giles.*

THE GREAT FALLS, YELLOWSTONE PARK.

This torrent of water, one hundred feet wide, falls in an unbroken mass of wave and foam three hundred feet into the Grand Canyon. On either side are pinnacles of sculptured rock, gorgeous with rainbow colourings.

The south face of the cliff is literally honeycombed with dwellings. A ledge midway up the face divides it into two parts. In some places the lower part contains three levels of dwellings, the bottom series being, in many instances, below the talus. The dwellings above the ledge are more scattered, but are also disposed in three levels. In this cliff there are three kinds of dwellings, namely: 1. Simple excavated caves. 2. Excavated caves with open rooms or porches built on in front. 3. Houses of stone, one to three stories high, and terraced, that rest upon the talus against the cliff.

At first glimpse the face of the cliff in which these dwellings have been excavated appears as if burrowing animals had made large caves for themselves beneath, while numberless holes and slots above suggest the presence of birds'-nests to which these were the entrances.

But after one has studied Puyé, he cannot fail to be amazed to learn that this was but one of several scores of such ruins, of greater or lesser interest, all of which are connected by a network of trails, clearly indicating that at one time this whole country was a mass of pueblo Indian villages in which dwelt an extensive population. One may walk over trails that are so worn, in some places, as to be hip-deep in the solid rock, showing how many thousands of feet have passed over them in the time that has elapsed since they were first laid out.

On the mesa the ruins of an ancient reservoir were found. This was oblong in form, its short diameter being about seventy-five feet, and the long diameter one hundred and thirty feet. The embankment is made of stone and earth, the opening being on the west. It could

not have been fed from any living source, and was undoubtedly used only for impounding such surface water as was conducted to it through a small "draw" to the west.

Near by there is an irrigation ditch, with its laterals, used for conveying water from the streams above the mesa to the level fields east and south of the village. But these were unquestionably of a later date, and are supposed to have been constructed after the coming of the Spaniards to the Rio Grande.

In another group of ruins of the Jemez Plateau, near the Rito de los Frijoles ("Re-to day loce Free-ho-lais")—the rivulet of the beans—is a painted cave, and a shrine in which are two carved mountain lions which stand in high relief above the bed-rock of the mesa. This is the famous "Shrine of Makatch." Here, among pinions and junipers, which have doubtless grown up since the shrine was established, is a place that must be the American Stonehenge. Great slabs of rock standing on end make a rude enclosure in which are found the stone lions. Figures of this character are used to this day by the Zuni and other pueblo Indians of Arizona and New Mexico as hunting fetiches, but many of the fetiches of the Zunis are tiny little things that could easily be carried in a lady's purse, while these are life-size. They have suffered somewhat by the erosion of the centuries, yet they are still strikingly life-like and real. The heads and shoulders have become almost indistinguishable, but the bodies and tails are still clear and distinct. The lions are in the crouching position always taken by these animals just before making their deadly spring.

The Grand Canyon of the Yellowstone.—We have already seen some of the marvels and wonders of the Yellowstone National Park, but the best wine has been left for the last. For, however striking and novel the Geysers are, they do not satisfy the imagination and feed the spirit as does the Canyon with its thrilling gamut of colour, its expansiveness and its rushing river.

Thousands of descriptions have been written of the Canyon and the Falls, but the following is both striking and vivid. It is from the pen of Dr. W. Hoyt: "Here is majesty of its own kind, and beauty too. On either side are vast pinnacles of sculptured rock. There, where the rock opens for the river, its waters are compressed from a width of two hundred feet between the Upper and Lower Falls to one hundred feet where it takes the plunge. The shelf of rock over which it leaps is absolutely level. The water seems to wait a moment on its verge; then it passes with a single

From Stereo copyright by] [*H. C. White Co.*

A DENDRITIC FOSSIL, YELLOWSTONE PARK

How the forces of Nature combined to form this marvel can only be conjectured. But to-day this giant fossil tree stands in Yellowstone Park, a wonder amongst wonders

bound of three hundred feet into the gorge below. It is a sheer, unbroken, compact, shining mass of silvery foam. But your eyes are all the time distracted from the fall itself, great and beautiful as it is, to its marvellous setting—to the surprising, overmastering canyon into which the river leaps and through which it flows, dwindling to but a foamy ribbon there in its appalling depths. As you cling here to this jutting rock, the falls are already many hundred feet below you. They unroll their whiteness down amid the canyon glooms.

"Besides, you are fascinated by the magnificence and utter opulence of colour. Those are not simply grey and hoary depths and reaches and domes and pinnacles of sullen rock. The whole gorge flames. It is as though rainbows had fallen out of the sky and hung themselves there like glorious banners, or the most glorious sunset you ever saw had been caught and held upon that resplendent, awful gorge."

From Stereo copyright by] *[H. C. White Co.*

LONE STAR GEYSER, YELLOWSTONE

One of the most beautiful, in formation and colouring, of the many geysers of Yellowstone Park.

There are many other wonders in the Yellowstone which must not be overlooked, and one of these is the magnificent Obsidian Cliffs, or walls of volcanic glass.

"These cliffs rise like basalt in almost vertical columns, from the eastern shores of Beaver Lake, and are probably unequalled in the world. They are from one hundred and fifty to two hundred and fifty feet in height and one thousand feet in length, although there are croppings of the same material to be traced as far as the Lake of the Woods, two miles beyond. This volcanic glass glistens like jet, but is quite opaque. Sometimes it is variegated with streaks of red and yellow. Large blocks of it have been, from time to time, detached, forming a sloping barricade at an angle of forty-five degrees to the hot springs at the margin of Beaver Lake." It was necessary to build a carriage road over these blocks. This was accomplished by Colonel Norris, the second superintendent of the Park, and, as far as is known, is the only *glass road* in the world.

Havasu Canyon.—One of the most remarkable tributaries of that great and wonderful waterway, the Grand Canyon of Arizona, is Havasu Canyon, often called Cataract Canyon, from the seven exquisite and beautiful waterfalls that are found therein. The name Havasu is made up as follows: Haha, water; vasu, blue—the blue water, and the Indians who live in this canyon are the Pai, people; hence they are "the People of the Blue Water." For many miles the canyon winds its way down deeper and deeper into the strata of the rock of which this whole plateau province is composed, with scarcely any water, save here and there in a rain-pocket, until, suddenly, the roar and rush

Photo by] *[George Wharton James.*

HAVASU CANYON, ARIZONA.

Seven beautiful waterfalls flow into the Havasu Canyon, which is a branch of the Grand Canyon of Arizona. The name signifies "The Valley of Blue Water."

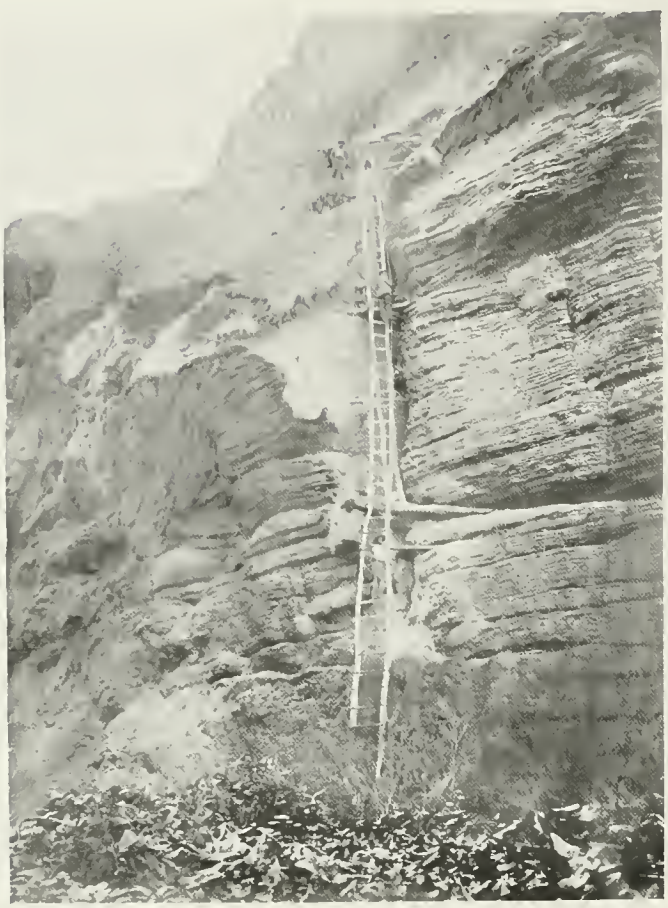


Photo by] *[George Wharton James.*

THE HAVASU CANYON.

A view of the Canyon near Mooney Falls. A tragic incident gives the name to this spot, for here a prospector lost his life in his endeavours to descend these precipitous heights.

of waters is heard. And there, about five thousand feet below the surrounding plateau, a thousand springs bubble forth from under the solid rock, all uniting to form one of the most beautiful of streams, the Havasu—on the banks of which the Havasupai have their homes. The village extends for about two miles, then the canyon descends in a series of abrupt steps or precipices, and at each step, necessarily, a waterfall is made. The first is comparatively small and is named after the former chief, Navaho Fall. The second is about one hundred feet high, and is called Havasupai Fall, while the third is one of the most wonderfully beautiful falls it has ever been my good fortune to witness. It is over one hundred and fifty feet high, about five hundred feet wide, and is composed of over five hundred separate bodies of falling water, some large, some small, few of them falling the whole height at one leap, but arrested in their descent by a peculiar formation. This formation is a kind of limestone or silica accretion which solidifies about the twigs, roots, stems, vines and the trees which line the edge of the fall and the face of the cliff over which the water pours. The result is a large number of stone half-umbrellas, each adorned with lace-like stalactites. These "umbrellas" are at varying heights, and are affixed to the face of the cliff. The effect, then, may easily be imagined. The water of the fall, being divided at the crest over an extent of about five hundred feet, falls in bodies of varying amount upon these umbrella-like projections, some five, some ten, some fifty, some seventy-five feet or more from the crest. In some places a stream falls upon one of the "umbrellas" and is divided upon it, to fall upon two others a few feet below, and so on. The whole effect is of entrancing beauty entirely unlike that of any other known waterfall in the world.

A mile further a leap of between two hundred and three hundred feet is made. Here the walls are almost two thousand feet high, and are of a rich red colour. Gigantic trees grow in the canyon beneath, and the stream now flows through a wild tangle of underbrush, vines and trees. The sediment which forms the limestone and other accretions before described here catches upon the vines, etc., and builds up a series of walls containing deep pools, somewhat after the fashion of the pools in the hot springs basin at the Yellowstone. These pools are of a rich blue water and some of them are very deep.

A few miles below Mooney Falls there is another beautiful fall, called Beaver Falls, and then, the canyon growing deeper at each step in its progression, the pure blue waters of the Havasu are swallowed up in the madly-turbulent waters of the raging Colorado.

Bone Cabin Quarry, Wyoming. Wyoming has been noted for three vastly different kinds of quarries, all practically unknown forty years ago. These are (1) the quarries near Sherman, on the highest points of the Union Pacific Railway, where thousands of fossil fish have been removed. These are embedded in a clay which has hardened, and the fish now have the appearance of skilfully executed *bas-reliefs*. Many of them are large, and all are interesting and valuable. Thousands have been removed in a perfect condition. (2) Then the palæontologists discovered great beds of the bones of giant creatures of the earliest geological ages—of the monsters of the days when giant birds flew through the air, mammoths walked through the forests, and, to our present day conception, hideous monsters, half reptile and half fish or bird, lay in the marshes and muddy shores of prehistoric lakes and inland seas. (3) The latest discoveries are of extensive quarries, where prehistoric peoples found quartzite and jasper, out of which to make chipped implements; some of these quarries cover acres in extent, and thousands of tons must have been removed since they were first opened. Nearly everywhere in Wyoming, also, but more especially in the eastern part, circles of stones have been found. These are now known to have marked the sites of ancient tepees, or Indian "hide wigwams," the stones having been employed for the purpose of holding the skins in place after they were wrapped around the tipi (*tepee*) poles. The Blackfeet Indians of Montana still use rocks for this same purpose.

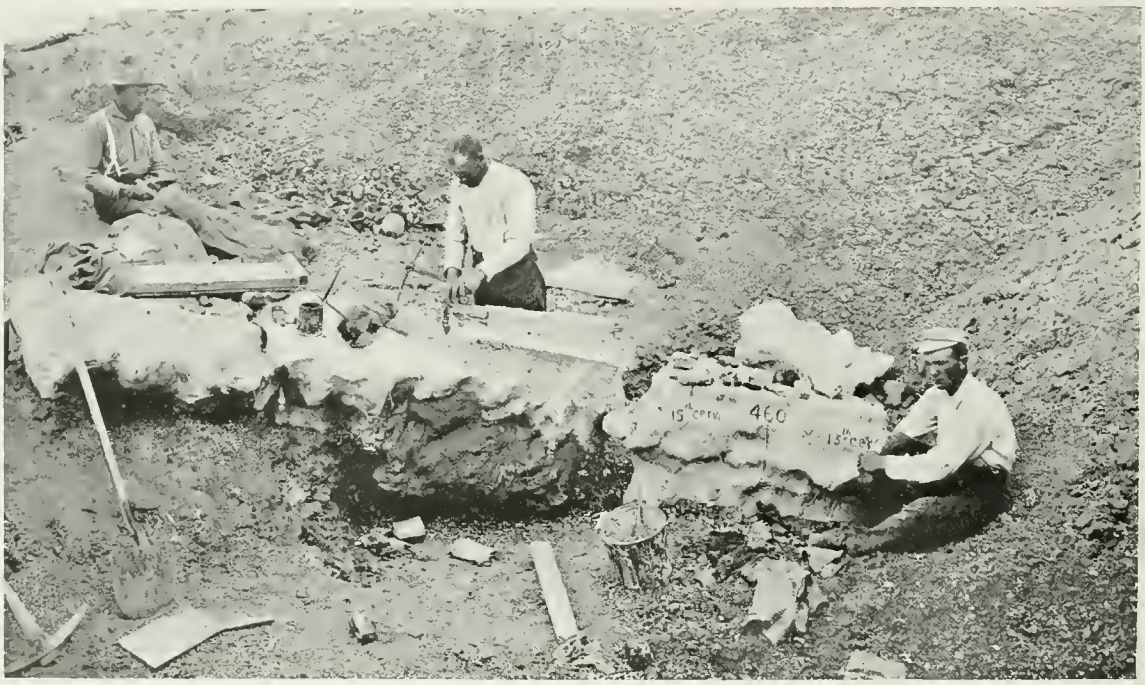
The quarries are found in the spurs of the Rawhide Mountains in Eastern Wyoming, in great patches of mesozoic rock, which have been exposed by the ravages of time. In these strata, mainly of cretaceous age, occur remarkable beds of variously-coloured quartzite, jasper, flint and moss-agate. On Lighton Creek, twenty miles west of the Rawhide Mountains, a large quarry is found near the crest of a steep hill nearly five hundred feet above the plain. The slope is covered with spalls of frosted-off talus, or slide rock, as it is commonly called. Near the summit, where quartzite was exposed, the primitive artisan had conducted his labour. He had taken advantage of the edge of

BONE QUARRY, WYOMING.

There are at least three distinct species of quarry in this district. On the highest level are the remains of fish, lower down are the bones of mammoths, and finally valuable proofs of extensive workshops for the making of flint weapons by prehistoric man have been discovered

the cliff, where quarrying was comparatively easy, and had worked along the natural fissures, which had been widened more or less from year to year by the expansive force of freezing water making cracks large enough for driving in stone wedges. A vast number of chips are scattered in and about the quarry. Down the slope the spalls, too, had been worked over into small circular pits, where the refuse rock had been carried to the edge and deposited. Throughout the entire workings there are hundreds of wagon-loads of roughened-out quarry blocks shaped into some semblance of the implements for which they were intended. Back from the works on the summit of the hill are a score or more of boulders, around which are innumerable chips, plainly indicating that the aboriginal artisan had used the rocks for seat and anvil while he flaked his implements into the desired shape.

Near these small workshop-sites many fine projectile points (arrow and spear heads, etc.), scrapers, drills, punches, etc., were found, while lying on the refuse were hammer-stones of trap



BONE QUARRY, WYOMING.

The giant bones of a mammoth being unearthed from the Wyoming quarry, the richest storehouse of prehistoric remains in the world.

very badly shattered, thus showing hard usage. On the plains below, scattered along the course of the creek, were the tipi circles before described, indicating that a very large village at one time was located here.

In 1906 an expedition from the University of Nebraska explored the region, spending two weeks in the vicinity of the quarries and securing over two thousand implements in seven stages of manufacture, from the rough block to the finished implement.

While clambering up the almost inaccessible slope of a rocky hill, the members of this expedition discovered a remarkable figure laid out upon the hill—a gigantic representation of a human figure made of spalls. It was fifty-five feet long and about eight feet wide, the body looking not unlike a stone wall. The spalls forming the figure had been obtained near by, and had been carefully selected and assorted in regard to conformity as well as size.

The Roosevelt Dam, Arizona.—The life of Theodore Roosevelt has been a remarkably fortunate one. Things have seemed "to come his way" far more than in the lives of most men. But in

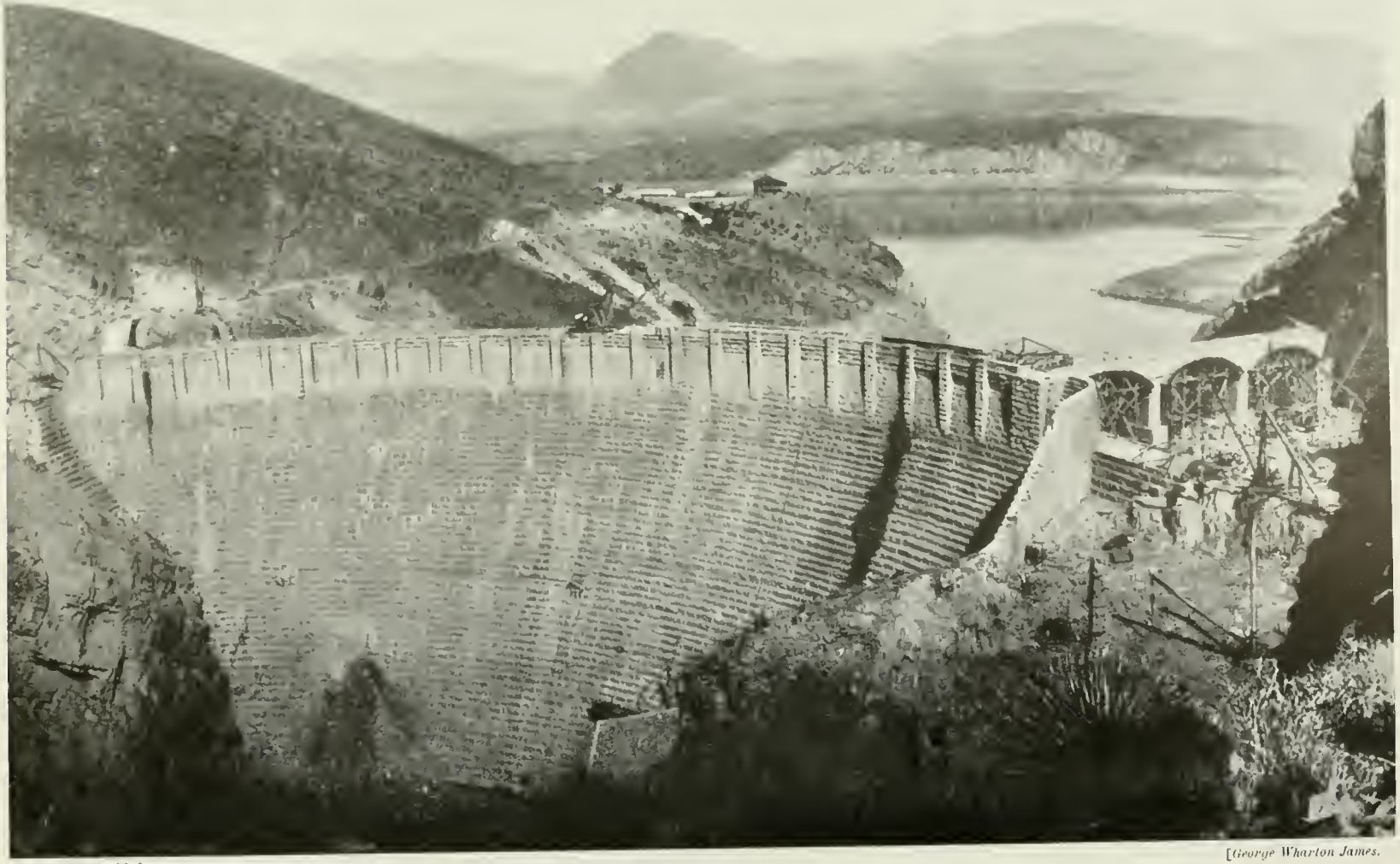


Photo supplied by] [*George Wharton James.*

THE ROOSEVELT DAM, ARIZONA.

This dam was built on Salt River, just below Tonto Creek, for the purpose of irrigating a desert area of over 350,000 acres

Photo supplied by] *George Wharton James.*

THE ROOSEVELT DAM, ARIZONA.

A reservoir has been formed by this dam that is one of the largest artificial lakes in the world. Enough water is stored here to cover Chicago, a city extending 190 square miles, to a depth of 11½ feet

nothing has he been more fortunate than in the fact that the Reclamation Act was passed during his administration. I venture the assertion that in a hundred years or so from now the signing of the Irrigation or Reclamation Act on June 17, 1902, by President Roosevelt will be regarded as by far the most important act of his whole career. It will also be noted as one of the proofs of his popularity that one of the most gigantic masonry dams of the world, that this Act called into existence, should be called the Roosevelt Dam.

The Salt River project of the Reclamation Service is one of the most important it has yet undertaken. About three hundred and fifty thousand acres of land were to be reached. Here was a vast area of desert, the major part of which was taken up or purchased by earnest home-seekers, but was, however, practically useless without water. With water it was capable of making happy and prosperous homes for many thousands.

A number of attempts had been made to supply needful water by independent companies organized at different times to supply different sections, but the Reclamation Service took hold of this matter in a large, broad way. It purchased all the rights of the old companies, including their irrigation systems, and then proceeded to unite them in one new and complete system that would stand all strains. The Roosevelt Dam is but one part of the great Salt River project; but it is the chief feature of the project. It is located just below the junction of the Tonto Creek with the Salt River.

This dam has created a reservoir which is one of the largest artificial lakes in the world. Its capacity is ten times greater than the great Croton Reservoir, which supplies New York City with water. There is water enough stored there to cover the whole State of Delaware to a depth of over a foot. The dam is of solid masonry, 235 feet long at the river bed; 680 feet on top; thickness at the bottom measured up and down stream 168 feet; and 284 feet above the lowest foundations. It is an arched dam with the arch upstream, and the solid contents of the dam

is 329,400 cubic yards and a height of 220 feet is actually covered by the water. The water-shed supplying the water is about 6,200 square miles in extent. The lake is about four miles wide by twenty-five miles long. Imagine water enough to fill a canal 300 feet wide and nineteen feet deep extending from Chicago to San Francisco. Or, if its enemies wished to blot Chicago from the map—Chicago, the great Western city which embraces 190 square miles—let them turn the water of the Roosevelt Dam upon it and it will cover it to the depth of eleven and a half feet.

This dam is located seventy miles north-east of Phoenix. The first thing the Government did was to undertake to build a road sixty miles long from Mesa, so that the machinery could be hauled to the dam site. This road must be put through the heart of a rugged range of mountains and for a large part of the way literally carved from the solid rock

In November, 1905, one of the largest floods known on the river occurred, the rise being over thirty feet in fifteen hours, or from a flow of two thousand cubic feet per second to a flow of one hundred and thirty thousand cubic feet per second. This flood destroyed all work that had been done in the river and washed away some of the masonry, and the flood conditions prevailed so that for five months practically nothing could be done. As soon as the flood subsided, work began again and was kept up day and night, until, on the 20th of September, 1906, the first stone was laid in the dam. When it is remembered that each stone had to be thoroughly washed, turned over and about in every direction so that the inspectors could see if there were any flaws or cracks in it before it was put into place, it will be seen how carefully the work was done. From September 20th to December 1st, the masons were

Photo by] [*George Wharton James.*

THE GATEWAY, THE BLUE CANYON.

These masses of red sandstone, resembling the propylæa of Egyptian temples, rise abruptly from the smooth floor of the canyon and form a passage of majestic splendour.

able to work without cessation ; then the winter rains began and drove out the workers and kept them out until April, 1907. It was not until the middle of June, 1907, that the masonry was uncovered, thoroughly cleaned and made ready for the resumption of work. Another flood occurred in the summer of 1907, and from February 1st to June 1st, 1908, the entire flow of the river was turned over the north end of the dam while the contractors worked on the south two-thirds. This was done in order that the six iron gates of the sluice tunnel might be put in position. These gates, with their operating accessories, weighed in all eight hundred thousand pounds, and were constructed and erected by the Llewellyn Iron Works of Los Angeles at a cost of two hundred thousand dollars.

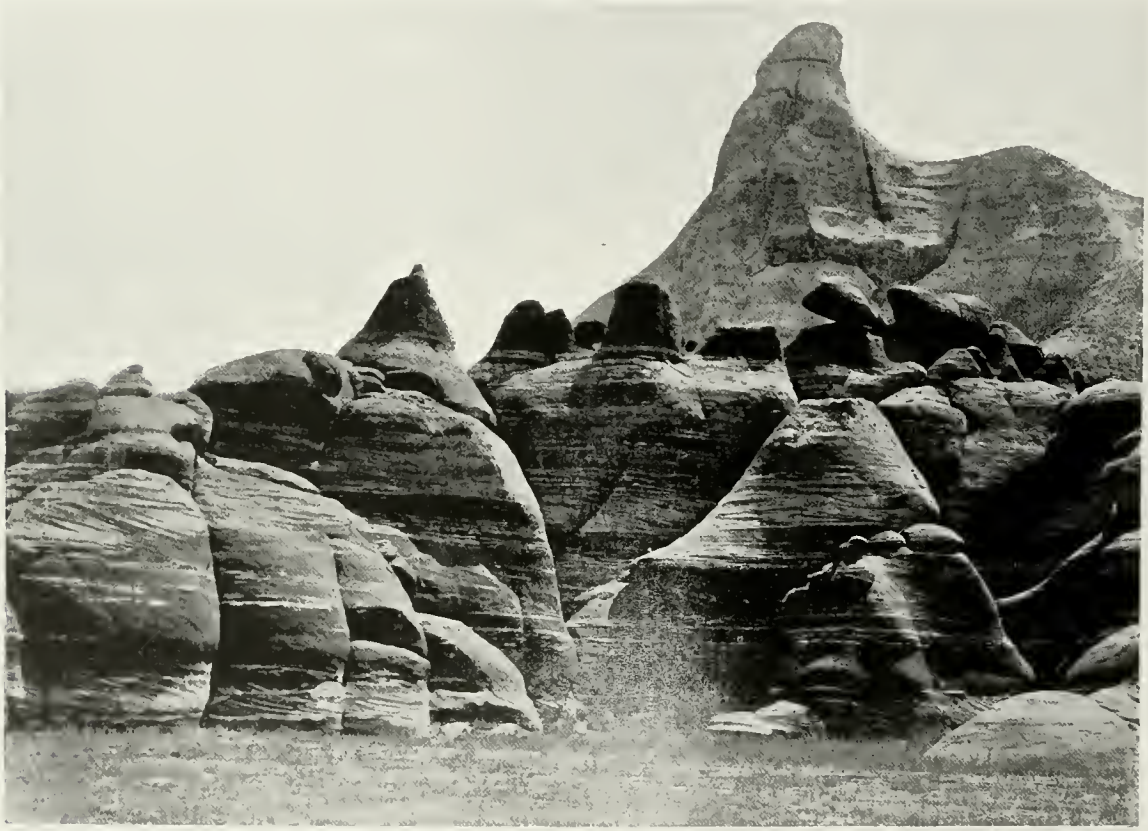
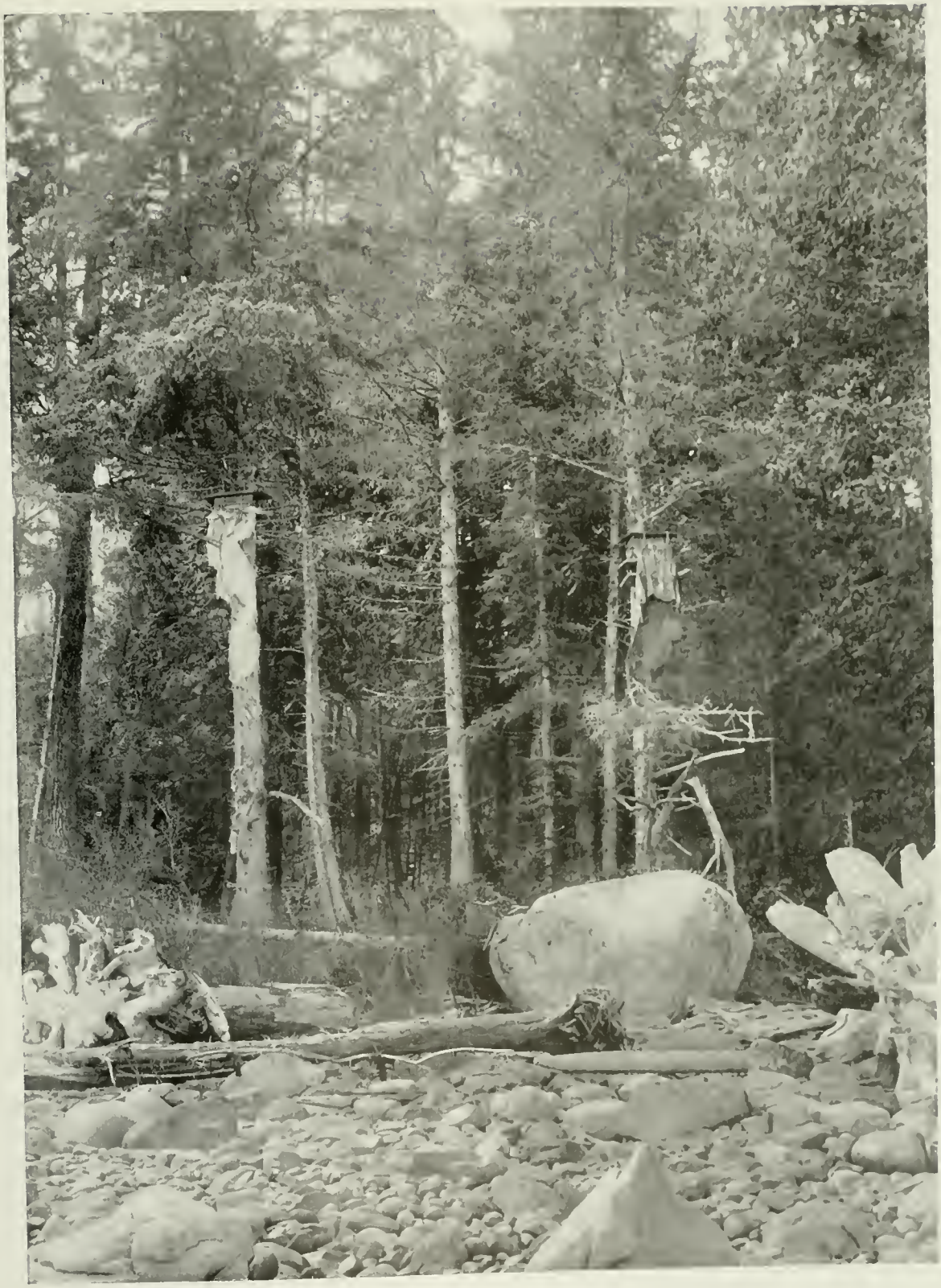


Photo by] *[George Wharton James.*

THE BLUE CANYON, COLORADO.

These curious rock formations are composed of many-coloured strata of sandstone, streaked with white quartz, and carved into fantastic shapes by the weather.

Blue Canyon, Arizona.—Arizona is pre-eminently a land of natural wonders. Much of the country, however, is desert, dry, hot, inhospitable, with little water, no population save a few nomad Indians, and no business or industries. Hence, as yet, many of these wonders are unknown to all save the few adventurous explorers who have braved all its dangers in order to enjoy its charms. In riding once across the country from the Hopi agricultural settlement of Moenkopi to the mesa town of Oraibi, we crossed a portion of the Hopi and Navaho reservations over which no wagon as yet had gone. I had engaged a Navaho Indian guide, and he informed me of a wonderful and deep canyon that it might be difficult for us to enter, though there would be no difficulty to our going out on the other side. He did well to hint at difficulties ; for only the stoutest heart could encounter them unmoved. The first part of the trail was cut in the sheer cliff, which developed into a steep slope of sand, so steep that the horses had difficulty in



TREE BURIAL IN ALERT BAY, BRITISH COLUMBIA

Every Indian tribe has a form of burial peculiar to itself. That of the Alert Bay Indians, who are a tribe of the Haidas, is to burn their dead and then place the box containing the ashes on high platforms or in the trees.

Photo by] [*George Wharton James.*

HOMES OF THE PIMA INDIANS, BLUE CANYON, ARIZONA.

The house in the background is the *Kan*, or winter home of the owner; the willow structure is also used as a refuge from inclement weather, but it is under the open shelter that the major portion of the year is spent by the household.

managing the descent. Finally there came a leap in a cloud of sand and dust, and we were safely arrived in the wonderful gorge where a crowd of interested Navahoes intently regarded our invasion of their hitherto unviolated precincts. While the horses were feeding on the cornstalks gained from the Navahoes' cornfield I went up the canyon and found it all that it had been described. Our guide had termed it "The Blue Canyon"—though the Indian word for blue is the same as for green. Nor was this definition of the wonder-place incorrect. The formation of the upper part of the canyon was in a richly-coloured sandstone, with reds, greens, blues, greys, chocolates, carmines, etc., streaked with white quartz, and carved by the weather into fantastic forms and shapes, mainly into rude cones or sugar-loaves, crowned with nipples of varying sizes.

The gateway through which we emerged to the outer world again was a noble mass of homogeneous red sandstone, seamed in one place only. It would not have required much stretch of the imagination to conceive of this as a gateway similar to the propylæa of the Egyptian temples, leading one into a world of sculptured mysteries beyond. Yet, save for a few families of Navahoes, this rocky marvel has stood since it was created, awaiting the time when those should discover it who would fully know and appreciate it.

The Pima Indians of Southern Arizona are semi-nomads, who have always been friendly to the white men. In the illustration above the three types of their dwellings are shown. The oval structure in the rear—a winter *kan*, or hut, is made of willows covered with mud, and is for use in the cold weather. When the doorway is securely closed all cold, light and air are so perfectly excluded that I have often used one of them as a dark room, in the middle of a glaring sunny day, for the changing of my photographic plates. By its side is another type of dwelling, made of the willows placed upright and held together by rods placed horizontally across them: while the open structure is the living-place during a large part of the year.

Here, in the open, merely sheltered from the direct rays of the sun, the major portion of their life is carried on. Cooking, eating, making basketry, pottery, sleeping—all takes place here, with the result that they are a healthy, happy, vigorous race, appreciating to the full their free and out-of-door existence.

Disposal of the Dead in Trees, Alert Bay, British Columbia.—A large volume might easily be written on the burial or mortuary customs of the families of the human race. In Alaska there is quite as large a diversity of methods of burial as there are tribes. For instance, the Alents fully clothe and mask their dead and then swing them in boats or specially-constructed cradles from poles in the open air. Their aim seems to be to keep the body as far from the ground as possible. The Eskimo, on the other hand, doubles the body up, places it on the side in a plank box, which is elevated three or four feet from the ground on four posts. This box is often covered with painted figures of birds, fishes or animals, undoubtedly the totem of the departed. Sometimes the body is wrapped in skins, placed upon an elevated frame, and covered with planks or trunks of trees so as to protect it from wild beasts. The Thlinkets burn their dead and then place the ashes in a box somewhat similar to that used by the Eskimos and elevate it in the same fashion. The Chepewayans, who belong to the great Tinneh family, never bury their dead, but leave the bodies where they fall, to be devoured by wild beasts or birds of prey. The Atnas of the Copper River burn their dead and collect the ashes in a new reindeer-skin, enclose the skin in a box, and then place the box on posts or in a tree.

In one of the smaller straits just below Queen Charlotte's Sound are two islands, the Cormorant and Malcolm. In the former is a small inlet known as Alert Bay, where dwell a small tribe of the great family of the Haidas. The custom of the Alert Bay Indians, when any member of their tribe dies, is to burn the body, encase the larger bones and ashes in boxes, baskets or canoes, or wrap them in mats or bark, and then place them on platforms or in trees, where they remain indefinitely. As the Wootkas live near the Haidas in this region and the two tribes often come in contact with each other, occasionally the custom of the former is observed in the disposal of the Haida dead. Instead of burning the body, however, it is carefully wrapped in a mat made of cedar bark and then deposited in the tree. Both these methods obtain at Alert Bay.

The Cliff Dwellings of Walnut Canyon, near Flagstaff, Arizona.—Flagstaff is a little town,

Photo by] [*George Wharton James.*

THE CLIFF DWELLINGS OF WALNUT CANYON

perched high on the shoulders of the San Francisco Mountains in Northern Arizona. It is in the centre of a region of wonders. The mountain itself is one of the sacred mountains of the Navaho Indians. Within ten miles of the town, among the basaltic cliffs near the Lava Fields, is an interesting series of caveate dwellings of the Indians. These are mainly good-sized holes of irregular shape, found in the lava deposits on the tops of some of the smaller volcanic peaks east and south of the main San Francisco range. There is quite a number of them, and near by there have been picked up a number of pieces of pottery and several broken *me-tu-tes*, or grinding-stones, which evidently have seen much service.

Ten miles from these cave-dwellings, to the south and east, is Walnut Canyon, another of those deep gashes in the plateau region that gives its character to the Grand Canyon country. The trail to the cliff-dwellings of this canyon is precipitous. The dwellings themselves are found on narrow

Photo by] [*George Wharton James.*

THE CLIFF DWELLINGS, WALNUT CANYON.

shelves or ledges, which denote the changes in the hardness of the rocks. They are all of the same type. The under portion of the thick stratum of rock, being much softer than the upper portion, has eroded back to a depth of eight, ten and even twelve feet from the face of the cliff. These natural excavations seem to have been perfectly prepared for the Indians who wished to use them. Building up a wall in front and dividing walls at right angles, the excavations thus formed floor and ceiling and the dwelling was complete. There are many of these dwellings in the canyon, and at Flagstaff the visitor is shown a number of pieces of pottery, arrowheads, stone and flint hammers, axes, ears of corn, etc., which have been excavated from them.

Fossil Footprints, Nevada State Prison, Carson City, Nevada.—One of the earliest things I heard soon after I arrived in Nevada, over thirty years ago, was that some wonderful footprints had been unearthed by the convicts in the stone quarry of the State Prison at Carson City. To fully understand the significance of this find it is necessary to have a general idea of the "lay of the land" where they occur. Carson City is the capital of Nevada, and is situated in Eagle Valley. The

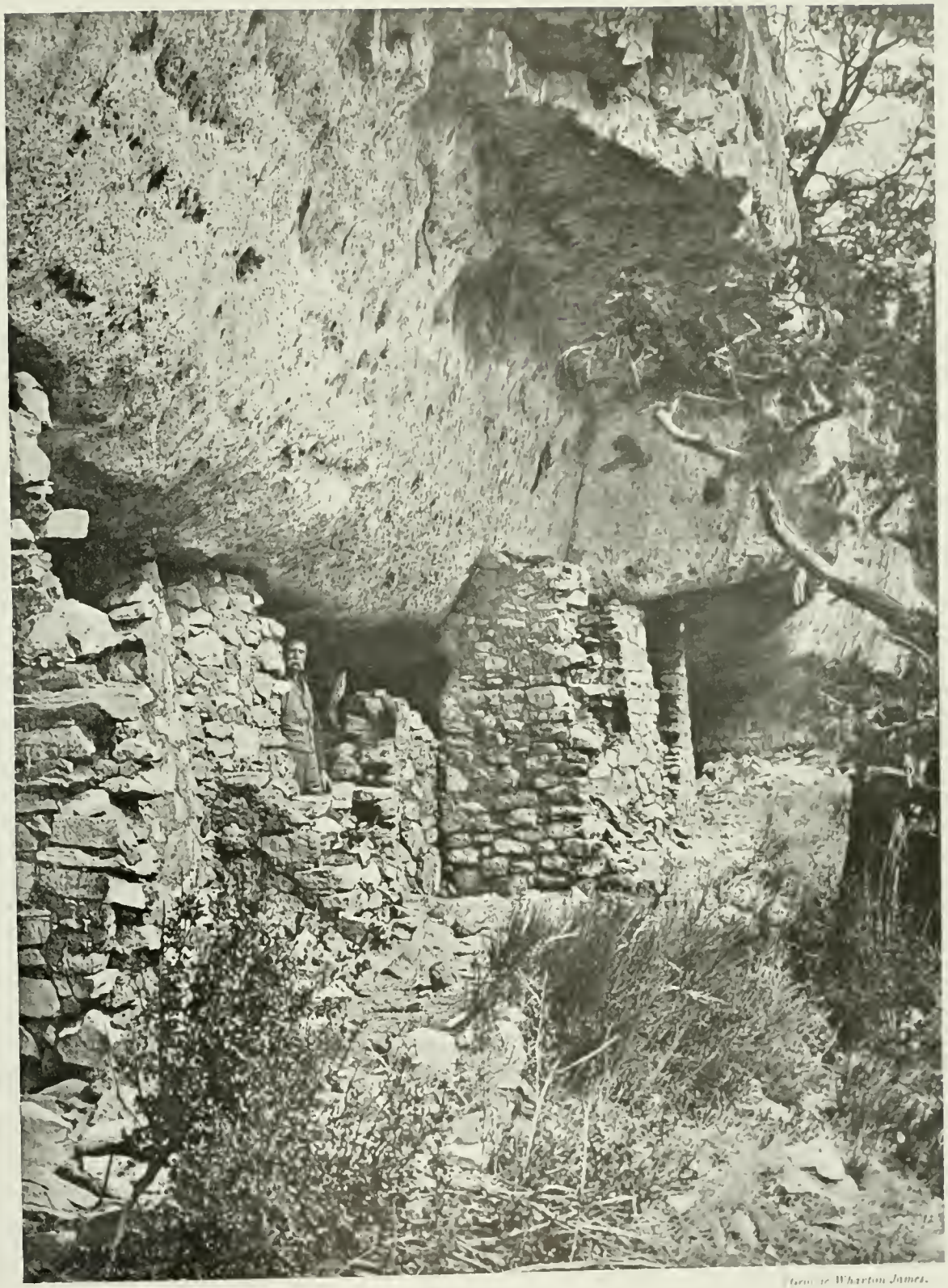


Photo by] *[Courtesy of Wharton James.*

WALNUT CANYON, ARIZONA.

The canyon stretches like a deep gash in the plateau of the San Francisco Mountains, and here, on narrow ledges of its precipitous sides, the cave-dwellers have made themselves houses by walling up the hollows in the rock face.

Photo by permission of [*The Southern Pacific Railway*

FOSSIL FOOTPRINTS, NEVADA.

These strange relics of a mammoth species have been unearthed by the convicts of the Nevada State Prison in the sandstone quarries of Carson City. They are found in a stratum of stiff clay silted over with sand and hardened by further deposits of sand and clay.

valley is about five miles long east and west, and three miles wide, and is almost entirely surrounded by mountains. On the west the Sierras rise abruptly to the height of eight thousand or nine thousand feet above sea-level—three thousand five hundred to four thousand five hundred feet above Carson—and separate it from the waters of Lake Tahoe, the largest lake of its altitude (one thousand five hundred and fifty feet), with but one exception, in the known world.

Dr. George Davis Loudesbach, one of the professors of the State University of California, thus writes of the footprints:

"In the early sixties the Nevada State Prison was established on a small, low, rounded hill at the north end of Prison Ridge, from which it is separated by somewhat lower ground. The site is about a mile and a half east of the city of Carson. It was recognized that this hill was made up of a moderately soft, but not friable, sandstone, which was therefore desirable for building purposes, and the State set its wards to work at quarrying.

"As the excavation progressed casts of shells, fragments of bones and other animal remains were frequently encountered. On raising the sandstone blocks from certain fine, thin layers that allowed the blocks to be readily prised up from the quarry floor, several series of unmistakable footprints were found distinctly preserved in the shaly bands.

"The tracks of large animals are not among the most commonly preserved relics of prehistoric life. They are usually destroyed by the waves, or obliterated by the gradual flow of the wet mud back into place. To preserve footprints we must generally have fine material, like mud or clay, and it must be soft enough to receive distinct impressions and stiff enough to hold them.

"The material that carries the impressions in the Carson quarry is, then, the very fine products of rock decay that were washed down some ancient river and settled in a layer a couple of inches thick over the sand. It contains considerable clay and was evidently very soft and plastic when it was wet, and on drying became rather stiff. After the impressions had been received sand was washed in over the surface and gathered to the depth of a foot and a half to two feet. Then

followed another period of more quiet deposition, and several inches of fine sandy clay were produced which were marked with new series of footprints, and these again were covered over and protected by more sand.

"In the Carson deposit mud cracks have not been noticed, but ripple marks, rainprints, and the effect of wind action on the tracks can be definitely made out, and these, combined with the necessary drying to stiffen the soft clay layers, seem to definitely indicate an air-exposed but still wet mud-flat across which the animals tramped, their feet, as we shall see, loaded with mud.

"One series of tracks on whose nature there has always been agreement is made up of oval impressions almost circular, a little longer than wide, and about twenty-two inches in greatest diameter. These imprints are deep—two to six inches—the foot having frequently squeezed out the mud at the edges and deformed the underlying sand. The step is about four and one-half feet, or the footprints on the right- (or left-) hand side (that is the successive tracks made by the same foot) are nine feet apart. These tracks were evidently made by some large elephant-like animal, probably the mammoth.

"The greatest interest has centred about a peculiar type of track that has been found in several series, and much more abundant than those already described. These imprints vary in size in the different series, and correspond to larger and smaller individuals. They vary from eighteen to

Photo by] [*F. J. Tyler Frost*

RUINS IN YUCATAN.

The Palace, Sayil, Yucatan, an immense building which has a frontage of 265 feet, with a depth of 120 feet. It is one of the very rare examples of a three-storied Mayan building, and contains to-day no less than eighty-seven rooms. The upper story, as will be seen from the illustration, is supported by large monolithic stone columns.

twenty-one inches in length and from six to eight or nine inches in width and are rounded at each end, the forward end being broader than the back part, and they are curved about with the hollow on the inside as in the imprint of a human foot. The longest series found had about forty-four tracks, and there are four or five others with from five to fifteen each. The tracks form a single series as if produced by a two-footed animal, the step varying from twenty-seven to thirty-eight inches, and from side to side are from fifty-four to seventy-eight inches apart.

"These are the tracks that gave rise to considerable discussion in the early eighties, because certain persons believed that they were human, and if so, giants' tracks; but a few obvious objections to the human theory present themselves.

Photo by] [*F. J. Tabor Frost.*

RUINS IN YUCATAN.

The Caracol or "Winding Staircase" of Chichen Itza stands on two rectangular terraces, and leads up to a turret, which it is reasonable to suppose was an observatory, perhaps connected with the religion of sun worship.

"The most satisfactory explanation is, however, that the tracks were made by one of the several types of gigantic ground sloths. These remarkable animals are known to have migrated into North America from South America in late geological times (the Pliocene period) and their remains have been found in various parts of the United States.

"There are other tracks associated with these larger ones. The most easily recognized are the many footprints of a large bird with four toes, cross-shaped, the longer toe often five or more inches long, the step a foot to a foot and a half long. This undoubtedly represents some wading bird of the crane or heron type.

"A few tracks now not well preserved appear to represent a horse, some animal of the deer type, and some animal of the wolf type. Early observers reported tracks of some bovine, possibly a bison, and of a large cat, a tiger perhaps, but these are not now distinguishable.'

CHAPTER XIX.

By F. J. TABOR FROST.

Yucatan.—Of the marvels of man in the New World the ancient cities of Central America are the most wonderful. Throughout Mexico, Guatemala and Honduras they are found crumbling to ruins on the sun-baked plateaux, or buried in the thick, dank, primeval forests. The finest examples of these cities are found in that little-known peninsula, Yucatan, the easternmost State of the Mexican Republic. At the coming of the Spaniards many of them were occupied by the Maya tribe, whose descendants still inhabit the lands of their forbears. Whether the art of building, carving, writing and painting was actually known at the time of the Conquest of Mexico is uncertain, for all Maya records were carefully consigned to the flames by the early Spanish priests. The honour of discovering America's early civilization fell to Hernandez de Cordoba, who, in 1517, effected a landing on the northern coast of Yucatan. He was obliged to retreat, however, almost immediately, and the next landing did not take place until ten years later, when Cortez appointed one of his suite, Francisco de Montejo, for its conquest. After severe fighting, Francisco de Montejo was the first European to reach Chichen Itza, the stronghold and most magnificent city of the Maya race.

In the choosing of a site for their cities the first consideration of the Mayas was water supply. The soft limestone formation of Yucatan is of such a nature that it absorbs rain almost as soon as it has fallen, hence there are no rivers, and water is found only in enormous potholes or wells formed by Nature. There are two of these at Chichen Itza, and from them the city partially derives its name—Chichen meaning "mouth of wells," the Itza being added on account of the city being the head-quarters of the ruling *cacique*, or chief, of Yucatan bearing that name. Since the wells at Chichen were amongst the largest in Yucatan and the water supply was abundant there, the Mayas made it the site of their largest, and certainly architecturally their finest, city.

Photo by] *[F. J. Tabor Frost.*

RUINS IN YUCATAN

At Cancun Island, in the Yucatan Channel, this colossal head was found It formed part of a mighty figure that was placed over the doorway of an important building.

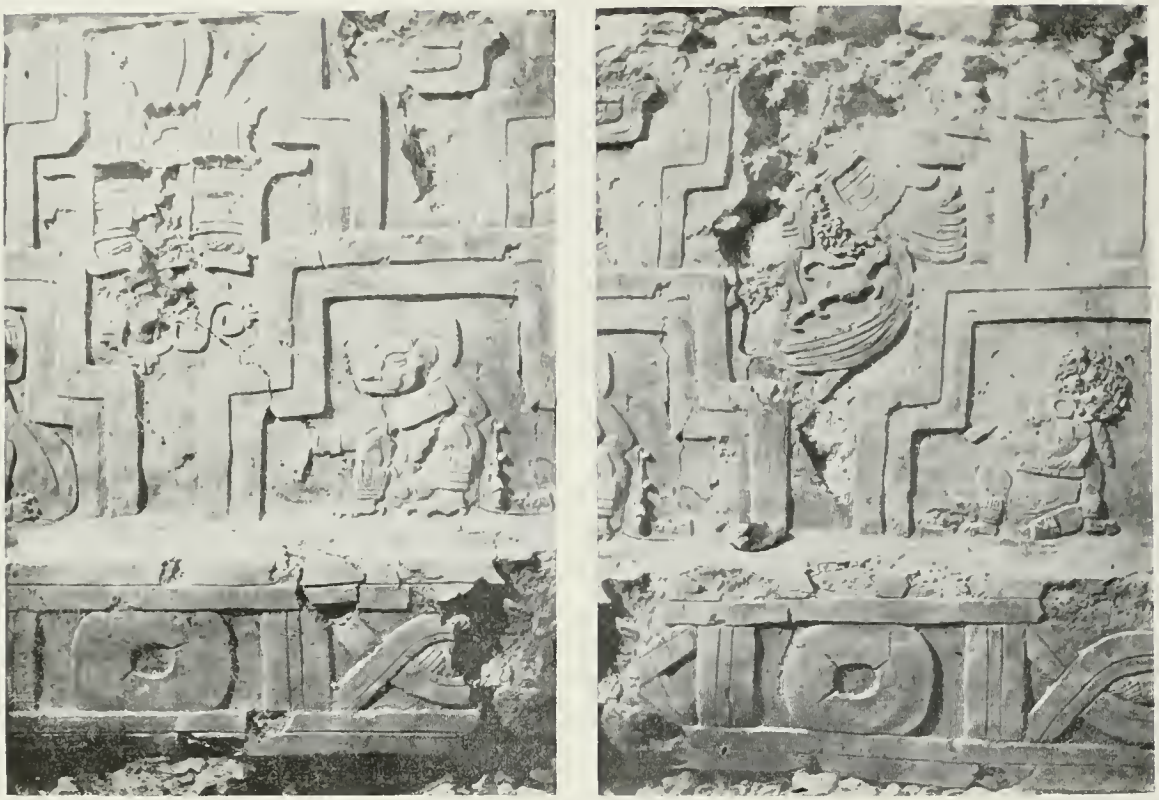


Photo by] [*F. J. Tabor Frost.*

RUINS IN YUCATAN.

Portion of a wall at Mayapan, an ancient city about thirty miles to the south of Merida, the present capital of Yucatan. The decoration is not carved, but moulded plaster, which in some cities was more common than carving in stone.

The city, as it stands to-day, consists of a group of six stone buildings which are more or less intact, and the remains of numerous other stone structures in various stages of ruin. All authorities agree that these buildings were the palaces of chiefs and officials, temples for the worship of the Maya gods and religious establishments for the housing of the priestly castes, the abodes of the poorer classes being palm-leaf huts, which have long since disappeared, but which in all probability were built in the same manner as the natives erect them to-day.

The building which is the most magnificent is, to give it its Spanish name, El Castillo. As will be seen by our illustration, this is a truncated pyramid faced with solid slabs of stone with a building on the top. An idea of the size of the pyramid may be gathered by the manner in which it dwarfs the trees around. From the ground-level to the top of the building it is over one hundred feet high, while the base lines of the pyramid are about two hundred feet each. The four sides all but face the four cardinal points, and on each of them is a gigantic stairway leading to the building on the summit. The main entrance to this building is on the northern side, looking towards the sacred *cenote*, which I shall refer to later. The doorway, which has now partly fallen, still bears traces of its former magnificence. It is twenty feet wide and the lintel was supported by two pillars carved in the pattern of snakes and ending at their bases with enormous, open-mouthed, flattened heads of these reptiles, the now empty eye-sockets being at one time filled with eyes of polished jade. The building was a temple, and inside the doorway is the Maya Holy of Holies which was used only for the purpose of performing the most sacred rites. Whether the ghastly sacrificial acts celebrated on the pyramids of Mexico, in honour of the God of War and the Sun Deity, were enacted in this temple is not known, but it would seem probable that those flattened heads of serpents on the

Photo by] [*F. J Tabor Frost.*

RUINS IN YUCATAN.

The Governor's Palace at Uxmal is a splendid ruin. It is about 300 feet long and has eleven doorways in front and one at each end of the building. The whole façade is ornamented with an elaborately-carved entablature.

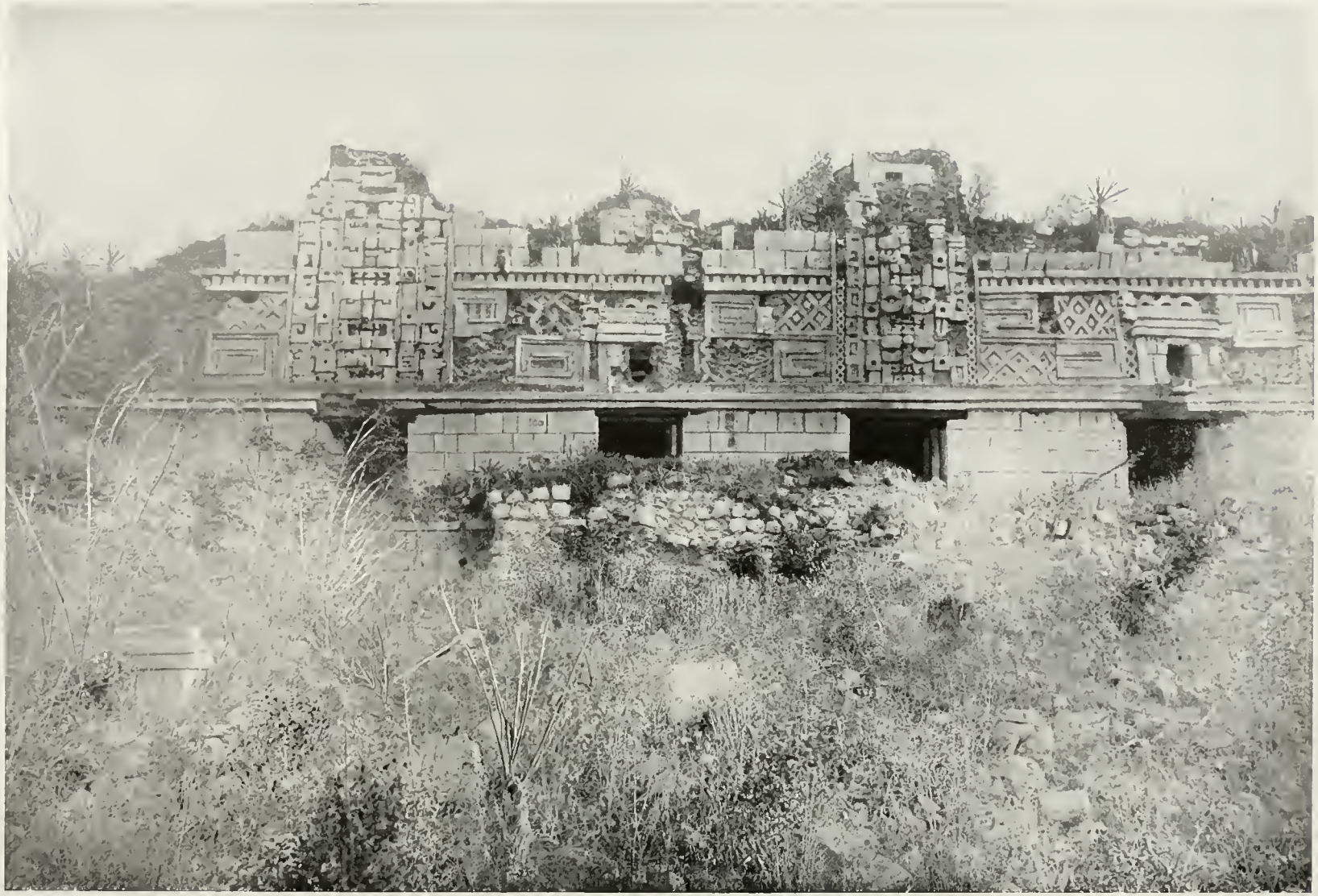


Photo by] *[F. J. Tabor Frost.*

RUINS IN YUCATAN.

One of the most important ruins in Uxmal is that of "The Nunnery." It was here probably that the girls, devoted to service in the temple, were housed, until the time came for them to be thrown into the "cenote."

platform of the pyramid served another purpose than that of an ornamental base for the door-pillars. If human sacrifices similar to those performed in Mexico were practised in Yucatan, then it was on the flattened heads of these serpents that the ceremony of tearing the palpitating heart out of the human sacrificial victim's body was performed by the Maya priests, and the body, scarcely lifeless, was rolled down the side of the pyramid to be sacramentally eaten by the hundreds of worshippers congregated on the plains below.

From the northern base of El Castillo a forest path, showing traces here and there of the remains of a cemented roadway, leads to one of the grimmest pools in the world. It is one of the wells, or cenotes, from which Chichen takes its name. An enormous circular basin, two hundred feet in diameter, its sides drop sheer and perpendicular over one hundred feet to its limestone bottom. As you stand on the brink and, clutching the branch of a tree for safety, gaze over its precipitous edge into the black water seventy feet below, you do not wonder that the ancient Mayas saw in its sepia depths the home of their Rain God. In a report sent to Madrid from Yucatan, in 1579, the sacrificial ceremony of throwing human victims into the cenote to appease the wrath of the Rain God in times of drought was described, but for centuries there was nothing to verify this tale. In 1906 the dredging of the bottom of the cenote was commenced, and during my visit to Yucatan in that year several human skulls and bones were brought to the surface. On close examination these human remains proved without exception to be those of females of immature age, and this confirmed once and for all the truth of the early Spanish report.

To the south-west, one hundred and thirty yards from El Castillo, is what is now known as the Tennis Court. Running north and south are two parallel walls twenty-five feet high, thirty feet thick, two hundred and seventy-four feet long and one hundred and twenty feet apart. The court was used for a ball game of which the ancient Mayas were very fond. It was played by teams whose object it was to get a ball made of rubber through a hole in a stone disc jutting out from the upper

Photo by] [*F. J. Tabor Frost.*

RUINS IN YUCATAN.

An arched gateway at Labua, Yucatan, which is remarkable as being the nearest approach, so far discovered in Central America, to the classic archways. It is, however, distinctly Mayan, since the apex is formed with a flat stone, common in all Mayan buildings.

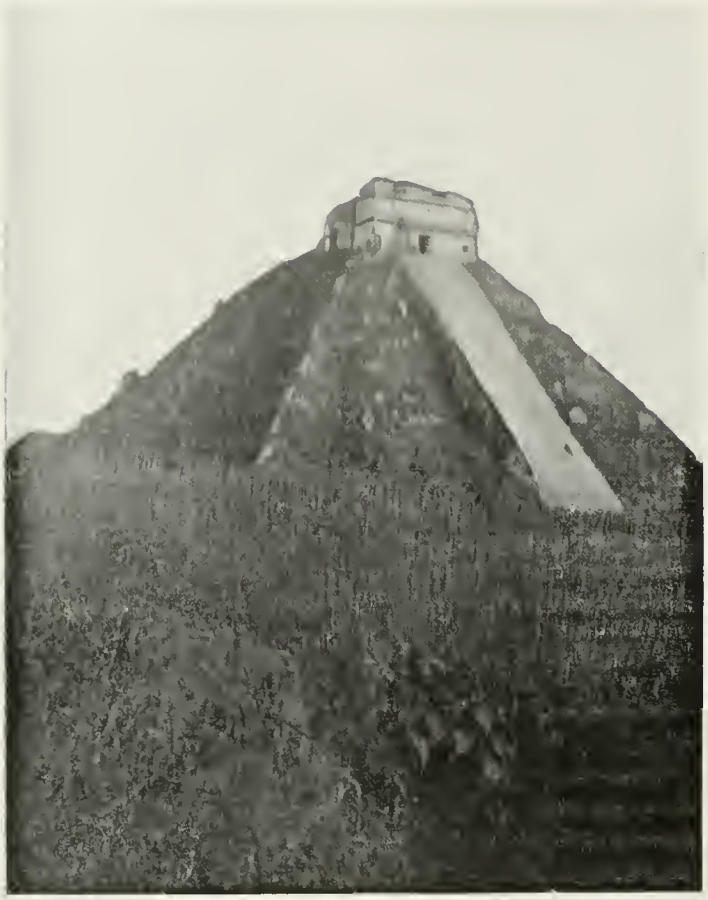


Photo by] [*F. J. Tabor Frost.*

RUINS IN YUCATAN.

Pyramidal Temple known as "El Castillo," which forms part of the ancient city of Chichen Itza, Yucatan, one of the most wonderful ruined groups so far discovered in Central America.

part of the wall on either side. One of these stone discs, measuring all but an inch of four feet in diameter, pierced through its eleven and a half inches of thickness with a hole one foot seven inches in diameter, is still in position. The Spanish historian tells us that the ball was bounced from the hips of the players through the ring, and the winning team had the right to take as their prize all the clothes of the spectators who ranged themselves on the walls above. At each end of the court stand the remains of a small temple, and on the eastern wall at the southern end is a building called the Temple of the Tigers, which gets it name from an elaborately-carved frieze design of these animals around the wall coping. On the walls of the interior of this building are the most remarkable Maya paintings that have so far been discovered. They depict the scenes of every-day life as it was lived by the Mayas before the coming of the Spaniards, in greens, reds, blues and yellows. The designs are crude and out of proportion, but much can be gleaned of the life of the past inhabitants of Chichen.

To the south of El Castillo stands a ruined building, known as the Caracol, from a "winding staircase" by which the top is reached from the interior. The building is turret-shaped and stands on two terraces one above the other, the lower one measuring two hundred and twenty feet by one hundred and fifty feet. The top of the building was about sixty feet from the ground-level and on it was originally an observation platform, which was, it is believed, used for the study of the heavens and was possibly connected with sun and star worship.

Only a short distance from the Caracol is another building which is a fine example of Mayan architecture. It is known as the Casa de las Monjas ("Nuns' House"), probably on account of its having been set apart for the housing of that body of young maidens who were known to have performed special services in the temples, and whose ultimate fate was in all probability the cenote. The photograph of the building here reproduced shows that it has well withstood the elements for four centuries at least, and gives a good idea of Maya architectural ornamentation.

The other buildings standing to-day at Chichen Itza are: the Akad-zib ("House of Mysterious Writing"), which gets its name from a series of Mayan hieroglyphics over the doorway; the Chichanchob ("Red House"), in allusion to the remarkable, possibly symbolic, decorations on the interior walls, which take the form of a hand painted in red, which design is, curiously enough, found also in parts of Asia; and a small building near the Casa de las Monjas.

Outside Yucatan the Maya civilization extended to Tabasco, where Palenque, one of the largest of the ancient cities, was discovered during the Conquest; to Copan and Quirigua, on the borderlands of Guatemala and Honduras, which are distinct from other ruined groups by the appearance of monolithic stelæ, varying from eight to thirteen feet in height and carved on all four sides. Our illustration shows the elaborate manner in which the design was carried out on these monuments. It is wonderful to think that such work was executed without the aid of metal tools, but it is distressing that the art of carving, painting and the knowledge of their hieroglyphic writing has been lost to the Mayas for ever.

CENTRAL AND SOUTH AMERICA.

CHAPTER XX.

By LEWIS SPENCE.

The Poas Crater.—Mount Los Votas, or, as it is sometimes called, the Poas Crater, is one of the great chain of volcanoes which tower upwards from the sea and form the backbone of the isthmian countries of Central America. It is eight thousand six hundred and seventy-five feet in height. The division of Costa Rican volcanoes to which the Poas belongs was once entirely separate

Photo by permission of] [*J. Hotchkiss, Esq., F.R.G.S.*

THE POAS CRATER.

Poas is one of the best-known of the "mud volcanoes" of Central America. The illustration depicts the boiling and bubbling flood of mingled mud and lava on the point of bursting forth in eruption.

from the more northerly group, and the depression which existed between them permitted a junction of the Pacific Ocean and the Caribbean Sea, which, had it survived until the present time, would in all probability have rendered the Panama Canal a work of supererogation. Indeed, on the slopes of some of the Costa Rican mountains deposits of fossil marine animals and plants are occasionally found. The fissure between the two oceans was, however, gradually filled up by ashes from the surrounding volcanoes, and by lava and other eruptive matter, which became gradually solidified by the sediment from the running waters. The Poas almost overlooks the city of San José, the capital of Costa Rica.

The Panama Canal.—The construction of a canal through the Isthmus of Panama for the purpose of ship traffic between the Atlantic and Pacific Oceans may justly be regarded as one of the most gigantic enterprises ever undertaken by humanity. Before the present site was agreed upon, consideration was given to no less than nineteen possible routes ; and at least one great and tragic

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CULEBRA CUT, PANAMA CANAL.

A view at Bas Obispo.

attempt was made to pierce the narrow neck which divides the commerce of the West from the markets of the East. At the present rate of progress the probable date of the opening of the Canal to the commerce of the world will be January 1st, 1915 ; but as Colonel Goethals, the chief engineer, has wisely kept a year in reserve in case of unforeseen accidents, such as landslides, it is just possible, if no such catastrophe occurs, that the Canal will be navigable in three years' time. At the present juncture the eyes of the entire world of commerce are directed to the Canal zone. Here is gathered an army of forty thousand men and the greatest collection of machinery ever brought together for the accomplishment of any single undertaking.

When the Canal is completed, it will be capable of floating the largest ships now built or building. Its inception as a waterway will shorten the distance by sea from New York to San Francisco by five thousand miles, and that from Liverpool to Western American ports by two thousand six hundred miles. Japan and Australia will be brought nearer to New York than to London or Hamburg.

The Canal was, in the first instance, a dream of the French Government. De Lesseps, the gifted engineer who had so successfully carried through the construction of the Suez Canal, was entrusted

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THE PANAMA CANAL.

Views of operations in the famous Culebra Cut.

From Stereo copyright by] [*H. C. White Co.*

CULEBRA CUT, PANAMA.

This photograph of the famous Culebra "Cut" shows the effect of a recent landslide. The earth in the vicinity of the "Cut" moves at a terrific rate, and will have to be dredged out of the canal when filled.

with its direction. Into the circumstances which hastened the downfall of the scheme there is now no necessity to enter. For half a generation the rotting machinery used in the French venture lay between Panama and San Pablo, a sad reminder of the failure of a mighty people. Then the United States of America stepped into the breach. Failure as disastrous as that of France was confidently predicted. But with characteristic energy the American people set about their task in an undaunted spirit, and the best men in the engineering corps of the United States army threw themselves into the breach, and formulated a system of organization which good authorities state has had few parallels in the history of great enterprises.

After much controversy as to the respective merits of a lock and a sea-level canal, the former was definitely decided upon in 1904, and work was commenced. Six locks, all identical, will be located at suitable points, three at Gatun, one at Pedro Miguel, and two at Miraflores. The total length will be forty-six miles, and the depth forty feet. Of this length thirty-nine miles will be carried through hilly country, the soil of which is being rapidly displaced by seventy steam shovels, at a rate of eighty-four thousand cubic yards of earth per eight-hours' day. The estimated cost of the engineering and construction work alone is £59,553,200, and the total cost, including purchase price of the Canal, £75,040,200.

At the present time the first impression conveyed to the mind of a spectator is that of noiseless, relentless activity and thorough-going organization.

The Atlantic and Pacific approaches to the Canal have practically been completed for several miles, and powerful dredgers of modern type are working incessantly night and day deepening the channels. One is particularly struck by the absence of human labour in the zone of the Canal proper. Here all is effected by the giant arms of modern machines. It is in the locks at Miraflores, at the great "cut" at Culebra, and at the Gatun dam and locks that the majority of the forty thousand toilers are located. For example, but few men are to be seen at work upon the mighty monoliths which will form the walls of locks capable of containing ships one thousand feet in length with one hundred feet of beam. The enormous quantity of rock and earth excavated is being removed by railway trucks to be employed in the construction of the great dams and breakwaters, and to level up the surrounding swamps. The subdivision of labour has been most cunningly devised, and the various departments work with a smoothness which cannot fail to strike the observer as remarkable.

Painted by G. H. Edwards. *Photo by permission of Sir Clements Markham*

OLLANTAY-TAMPU.

Situated some forty five miles north of Cuzco this great Inca fortress was built to defend the Valley of the Yucay from the inroads of the Chunchos Indians. The immense walls, comparable to the mightiest structures of Antiquity, are built chiefly of red porphyry.

At various points the difficulties experienced by the engineers can only be described as gigantic. The Chagres River was one of these. It has a total drainage area of one thousand three hundred and twenty miles, and when in flood carries down vast quantities of silt and boulders, forming an almost insurmountable obstacle to the construction of a canal through its valley. Then for a distance of nine miles runs another obstacle, almost as formidable, the celebrated Culebra "cut." In this tract the rock, which was soft, was easily removed, but its superimposition upon beds of slippery clay caused numerous landslides, which cannot be stopped—one, the Cucharaca, being a movement of soil half a mile in length, with an area of twenty-seven acres and containing twenty-seven thousand cubic yards of soil! This mass moved in 1907 at the rate of fourteen feet in twenty-four hours. To the American engineers these stupendous difficulties appeared by no means insuperable. By the erection of a huge dam at Gatun and a smaller one at Pedro Miguel, thirty-two miles away, they flooded the whole Chagres valley to a height of eighty-five feet above sea-level, thus transforming a roaring torrent into a serene lake, with an area of one hundred and sixty-four square miles. The landslides resulting from the Culebra cut have been minimized by raising the cut eighty-five feet higher, and making it three hundred feet wide at the bottom, so that the dredging of loose earth can be easily effected.

The Gatun dam presented another serious problem to the indefatigable engineers who had embraced this gigantic undertaking. The site adopted for it was found to possess a base so soft as to be incapable of supporting a heavy load such as the great barrier would present. Moreover, the material to hand for constructing the dam, consisting as it did of soft sand and clay, was not of the most desirable character. This difficulty was met by giving the dam a base so extended as to ensure stability, and its dimensions at sea-level are no less than nineteen hundred feet, with a slope in the sides of about ten to one. Its height is only one hundred and fifteen feet, and its breadth nine thousand feet. The outcry among engineers in the United States as to the impossibility of forming a dam at Gatun was so great, that the Canal authorities, "for sentimental reasons," constructed it enormously greater in width and flatter in slope than was necessary.

Near one end of this dam are the Gatun locks—three lifts, the total height of which is eighty-five feet. One of these will be used for north-bound and the others for south-bound vessels. Near the other end of the dam is a spillway, three hundred feet wide, through which the surplus water of the lake will be discharged. At the top of this will be a series of gates capable of being opened in time of flood for the regulation of the height of the lake. This spillway is capable of discharging water at the rate of one hundred and forty thousand cubic feet per second.

From Stereo copyright by] [*H. C. White Co.*

CULEBRA CUT, PANAMA.

The clever banking at the side of the "Cut" is well indicated in this photograph. This especial tract has cost the United States more treasure and her engineers more anxiety than would have resulted from a minor war.

From Stereo copyright by] *[H. C. White Co.*

CULEBRA CUT, PANAMA.
Rock work at Contractor's Hill.

At the southern end of Gatun Lake there is a twin lock, and at Miraflores Lake two locks, and at the latter place a spill-way will also be constructed. The general plan of the Canal occupied years of study by eminent engineers, and is now universally acknowledged to be the best possible scheme that could have been arrived at.

Not only did the projectors of this gigantic task have to combat the unruly obstacles placed in their way by nature, but they had, moreover, to face the problems presented by tropical diseases. The district in which the Canal was situated was a veritable hot-bed of malaria and yellow fever. The climate of the Isthmus was favourable to the dreaded fever-carrying mosquito, and the extermination of these pests had to be faced. This was effected by draining and destroying every pool of stagnant water in which their larvæ might accumulate, and covering with oil every swamp, drain and pool within reasonable radius of a human habitation. The isolation of fever patients was also strictly enforced. In consequence of these precautions the death-rate among the labourers employed in the canal construction is only 11.95 per thousand, a figure which will compare favourably with that of most European communities. Hospital and living accommodation has been brought as near perfection as it is possible to make it. Indeed, the keynote of the entire scheme, down to the smallest detail, is "efficiency."

Quite recently plans for large harbours at the Atlantic and Pacific ends of the waterway have been approved, and the work is being put in hand at once. At Colon there are to be five docks, capable of accommodating ten of the largest-sized vessels, and here also the Royal Mail Steam Packet Company has acquired a large tract of ground in view of eventualities. It is, however, on the Bay of Panama that the greatest activity is being displayed, as it is intended to construct there the great transhipping harbour of the Canal. The docks are to have an area in the turning basin alone of two hundred and seventy-one acres. It is calculated that the crossing of the Canal will occupy ten hours at least, as ships will not be permitted to pass in and out of the waterway under their own power.

The Volcano of Izalco.—That Nature had not completed the manufacture of volcanoes some hundred and forty years ago was proved by the sudden formation of the volcano of Izalco, in the

Photos by permission of] [*C. W. Lowther, Esq.*

AN ERUPTION OF IZALCO, SAN SALVADOR.

Izalco arose suddenly on 23rd February, 1770, and since then has continued to pile up a cone of volcanic ash and lava to a height of over 6,000 feet.

Photo by] [*J. Hotchkiss, Esq., F.R.G.S.*

THE CRATER OF IZALCO.

Filled with red hot volcanic rock which ignites the gaseous vapour hanging over the mountain, this brilliantly illuminated crater has caused Izalco to be nicknamed "The Lighthouse of Salvador."

Republic of San Salvador, where it arose in the year 1770. The place upon which it now stands was previously covered by numerous hot springs and volcanic vents, from which at intervals natural gas arose, and in the proximity was a large cattle-ranche, the inhabitants of which grew seriously alarmed at underground rumblings and other disturbances, which grew more threatening until the 23rd of February, 1770, when the soil was upthrown in the vicinity of the hacienda, casting forth lava, fire and smoke. From day to day the condition of the neighbourhood grew steadily worse, and showers of sand and stones were interspersed with the lava which continued to flow without intermission. From that time to this the disturbances have continued, and the matter ejected has formed a mountain some six thousand feet high, from which every quarter of an hour cinders, ashes and smoke are discharged in dense volumes. Frequent terrific explosions occur, and at night the surrounding country is illuminated at intervals by the blaze from the glowing mass within. From the depths of this veritable inferno great masses of red-hot rock are ejected, and these setting fire to the gaseous vapours which hang over the volcano create an effect like lightning-flashes. This display has caused Izalco to be nicknamed " The Lighthouse of Salvador."

In 1817 Izalco had a brief period of repose, but in 1844 and 1856 terrible eruptions ensued after the seventeen years of calm. Again in 1859, 1860, 1864, 1868 and 1869, and again in September, 1902, enormous streams of lava were ejected, which turned the surrounding country for leagues around into a temporary wilderness. Izalco is the principal volcanic outlet of the third division of the seismic chain which stretches from Panama to Oaxaca, in Mexico ; and as a volcano which has been

formed within the last century and a half, is regarded by geologists with much the same sort of interest that a new heavenly body would awake in the breast of an astronomer. It is a peculiarity of the range to which Izalco belongs that all earthquakes which take place in its vicinity occur at close quarters to the volcanic peaks of the series, and not at a distance of from four to five miles from them, as is generally the case in most European and Asiatic seismic centres. The association of the earthquakes with the volcanoes is so intimate that there can be no question that one is interdependent upon the other.

The Volcano of Cotopaxi.—The volcano of Cotopaxi, in Ecuador, has been called the "ideal volcano." Its shape is one of peculiar symmetry, and it is in constant action. The history of Ecuador is full of these eruptions. The flames of Cotopaxi lit the first battle in the country between the white man and the red. This mass, of an altitude of six thousand feet, presents the peculiar spectacle of a mountain, the eastern side of which is snow-clad, while the western side is almost bare. This phenomenon is due to the Atlantic trade-winds, which deposit their moisture on the eastern slope. Although always in eruption, Cotopaxi has caused at prolonged intervals the most frightful catastrophes. In 1877 a perfect deluge of boiling water, containing huge rocks and stones, was ejected from its depths upon the plains beneath, razing all human habitations, and levelling all obstructions in its path. Its passage resembled an enormous column of cinders, which the volcano hurled to a distance of nearly three miles, and many of which were actually carried to the shores of the Pacific.

Cotopaxi towers to a height of six thousand feet, and its crater measures two thousand three hundred feet from north to south, and sixteen hundred and fifty feet from east to west. Many travellers have scaled the volcano since the ascent of Reiss in 1872, and Whymper spent an entire night on the very verge of the crater for the purpose of observing the physiological effects of the

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MOUNT COTOPAXI.

Mount Cotopaxi, in Ecuador, is one of the most dreaded of the active volcanoes of South America. It is often called the "ideal volcano" because of its perfect shape. It has on several occasions devastated the surrounding country.

rarity of the air upon the human system. Occasionally Cotopaxi discharges single masses of rock to an immense distance. Colonel Church says of one of these colossal fragments: "I noticed a single fragment of rock, weighing perhaps forty tons, which must have been thrown from Cotopaxi, twenty miles distant. On a subsequent occasion I observed that certain of the Andean peaks must have magnetic attraction for each other, for riding on the Quinto Plateau, I watched two storms arise simultaneously, one of which centred round the dome of Chimborazo, while the other, fifty miles distant, crowned the summit of Cotopaxi. Blacker and denser grew the frowning clouds, until their artillery opened fire, and echo after echo pealed along the line of the Andes. The two angry monarchs had challenged each other to a duel. Suddenly through the highly-electrified atmosphere Chimborazo shot a hissing bolt straight for Cotopaxi, which, in turn, launched one at

Photo by permission of] [*Sir Clements Markham.*

HOUSE OF THE VIRGIN OF THE SUN, IN CUZCO, SHOWING TWELVE-ANGLED STONES.

The "Cyclopean" character of the Incan masonry is well depicted in this photograph, which shows how the stones were fitted one into the other. The large stone near the middle of the photograph has no less than twelve different angles.

Chimborazo. Then for perhaps twenty minutes, with a mighty and ceaseless roar, they hurled their well-aimed lightnings at each other until the battle-clouds dispersed, and peace smiled again upon their magnificent loneliness."

The Incan Ruins of Peru, Cuzco.—Scattered over the western slope of the Peruvian Andean range are the architectural remains of a civilization which must be regarded as one of the most remarkable produced by the aboriginal American race. For many centuries mankind had gradually been advancing in this area to the condition in which they were discovered by the invading Spaniards in 1534, and many of the architectural remains which still exist in Peru are of an antiquity far greater than the foundation of the Incan dynasty which flourished at the coming of Pizarro. Ruined edifices, built of gigantic blocks of stone, and often described as "Cyclopean," must undoubtedly be referred to a period in Peruvian development of which we have not even any legendary knowledge.

Photo by permission of [*Sir Clements Markham.*

VIEW OF CUZCO.

Cuzco, the ancient capital of the Incas of Peru, is famous for the architectural remains of the race which once ruled Peru from its palaces.

Photo by permission of] [*Sir Clements Markham.*

FORTRESS, CUZCO.

Another of the enormous corner-stones which formed an outwork or bartizan of the ancient fortress of Cuzco.

These are met with throughout the length and breadth of the country, and are known as the remains of the megalithic period.

Legends relate that when the founders of Peruvian civilization left the island of Titicaca, the Sun-god delivered into their keeping a golden branch which would take root in the earth at the spot where they were destined to dwell and found a centre of enlightenment for the human race. This marvel occurred at Cuzco, afterwards the capital of the Incan dominions. Situated at an altitude of over eleven thousand feet above the level of the sea, the ancient city rose imposingly upon a series of artificial terraces, constructed of immense masses of earth held together by Cyclopean walls, built of extremely hard rocks of great size carried by main force from the quarries of Anduhaylillas, twenty-two miles distant. The Peruvians possessed no draught animals, and the blocks must have been dragged from the quarry to the plateau of Cuzco by gangs of labourers. Authorities are agreed that all modern masonry is inferior when compared with that seen in the edifices of Cuzco. The great blocks were first carefully squared and then joined together by means of a mortise about one foot deep by one and a-half in diameter into which a tenon of nearly the same size, hewn out of the upper block, fitted securely. The walls required no mortar to keep them together, for their weight was so great that specific gravity took the place of cement.

Over all towered the mighty Sacsahuaman, or fortress, built on an airy rock which cleaves the meeting rivers of Huatenay and Rodadero. From the town side one might not ascend it, and the sole mode of access was a little path cut in the living rock which overhangs the banks of the Rodadero. The total length of the walls which enclose it is one thousand eight hundred feet, disposed in three great circles, and its bastions and angles of projection and re-entrance resemble those of a modern fortress. It was absolutely impregnable to a force not provided with artillery, and the early Spaniards implicitly believed that the Peruvians had been assisted in its construction by the Father of Evil.

Three entrances gave access to the outer enclosure, and immense blocks of stone were held ever ready to close these up at the first hint of danger. In a round tower in the centre of the citadel

were placed the treasures of the Incas, and it was from this that the last descendant of that ill-fated line hurled himself upon the failure of the last native insurrection against the cavaliers of Spain, in which Juan Pizarro lost his life. The hill near this gigantic fortress, the interior works of which are now a heap of ruins, is covered with richly-carved blocks of granite which evidently served the purpose of seats, and long galleries ornamented with descending terraces and broken by sculptured niches run round its slopes.

The Temple of the Sun, now converted into a Dominican convent, was situated on a hill eighty feet above the river Huatenay, and was reached by a series of enchanting garden-terraces, filled with the most marvellous designs wrought in solid silver and gold. The very garden implements—hoes, spades and mattocks—were of solid silver. These facts are vouched for by numerous eye-witnesses, among them Pedro Pizarro himself, and subsequent historians have seen no reason to regard their descriptions as in any way untrustworthy. Models of animals and insects of gold and silver adorned the spacious grounds, and such was the splendour of the surroundings that the entire quarter was known as Coricancha, or the City of Gold. The temple occupies one side of a vast court, called Intipampa, or Field of the Sun. The inner and outer walls, it is said, were covered with sheets of gold, and as evidence of this the celebrated Peruvian archæologist Squier states that he himself saw in various houses in Cuzco sheets of gold which had been stripped from the gleaming walls of the Temple of the Sun. These, he says, were of the thickness of paper.

The exterior of this famous temple gave an impression of massiveness rather than of grace, and the immense pylons or monoliths which supported the doorway remind one somewhat of the Egyptian type of masonry. The interior was profusely ornamented with plates of gold, and in a suitably exalted position was placed a huge plaque of the same precious metal upon which was depicted the features of the deity to whom the fane was dedicated. This was so placed that the beams of the rising sun fell upon it and bathed it in a flood of radiant light. The scintillation of the hundreds of

Photo by permission of] [*Sir Clements Markham.*

FORTRESS, CUZCO.

One of the mighty corner-stones of the Fortress at Cuzco. It is a standing wonder to antiquarians how the Ancient Peruvians were able to raise such enormous masses of stone to such a height, ignorant as they were of the principles of modern engineering.

precious stones with which its surface was enriched according to an eye-witness, made its brilliance almost insupportable, and the atmosphere of mysterious splendour was heightened by the presence of the magnificently-attired mummies of the dead Incas, which were grouped around this dazzling object. The roof was made from choice woods, but was covered only by a thatching of maize straw.

The utensils in this temple were all of the most precious metals. Twelve large vases of silver held the sacred grain, and even the pipes which conducted the water-supply through the earth were of silver. The splendid altarpiece representing the Sun-god fell as booty to one Mancio Serra de Leguicano, a reckless gambler, who lost it on a single throw of the dice. The walls of the Aclahuasi, or House of the Virgins of the Sun, are still standing close at hand, for a length of seven hundred and fifty feet. Here the daughters of the Incas were subjected for many years to a rigorous discipline.

Throughout the city of Cuzco extend long reaches of walls of stone cut with a nicety and fitting together with a precision unequalled in any of the ancient structures of Enrope or Asia. Many of these have been used as quarries from which to erect more modern buildings, but a large number form the bases upon which later dwellings have arisen, and it is no uncommon thing to see a mansion, the lower courses of which are composed of the original Incan stone walls on which has been superimposed the rubble walls faced with stucco of the modern Peruvian abode. The centre of the aboriginal city was the Huacapata, or great square, now occupied in part by the modern plaza, from which most of the principal streets radiated. Cuzco, like Rome, was built in a series of hills, so that the early architects were obliged to level the declivities and to form terraces upon which their buildings might rest. These terraces were confined by walls of the "Cyclopean" type, that is, built of stones of irregular sizes, but all fitting into one another with the greatest nicety. To relieve the monotony of these long stretches of masonry the Peruvian builders introduced niches at regular intervals, not unlike the Egyptian pylon doorway in shape—that is, narrower at the top than at the base. The precision with which these stones are fitted is beyond all praise. Those which bear up the terrace of the palace of Rocca weigh, many of them, several tons each, and are as hard as granite. Yet so finely are they fitted that it is said a penknife-blade cannot be introduced between them. One of them, the famous "Stone of Twelve Angles," is met on each of its dozen

Photo by permission of] [Sir Clements Markham.

LOWER COURSES OF INCA PALACE IN CUZCO.

This photograph beautifully exemplifies the wonderful masonry of the Inca builders of Peru. The stones shown in the illustration are fitted so accurately together that it is impossible to insert even a needle between them, and no mortar enters into the composition of the wall.

Photo by permission of] [*Sir Clements Markham.*

WALL OF AN INCA PALACE, CUZCO.

The blocks of solid masonry to the right of the picture stand out in sharp contradistinction to the somewhat flimsy-looking Spanish gallery above.

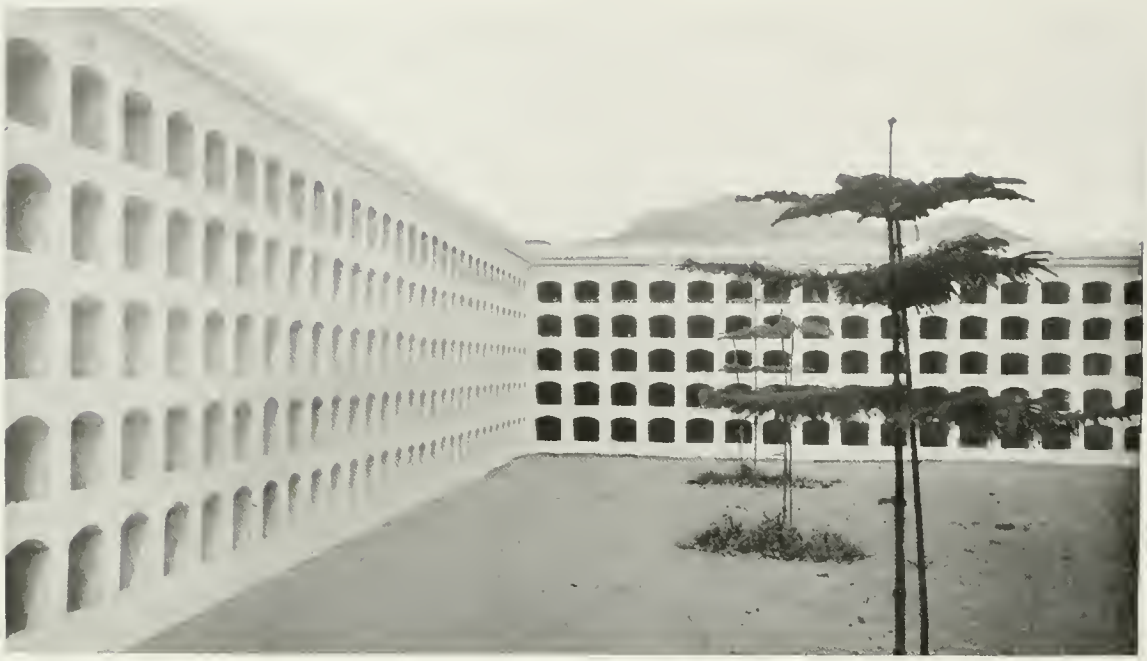

Photo by] [*N. P. Edwards.*

RECEPTACLES FOR THE DEAD, LIMA, PERU.

This burial-place of the Ancient Peruvians was discovered during the construction of a railway between Ancon and Lima.

sides by another stone, into all of which it fits exactly. In all of these massive walls there is absolutely no cement, the stones holding together by reason of the marvellous accuracy with which their superficies meet one another. Some authorities give it as their opinion that the Peruvian masonry is unequalled on the face of the globe for finish, and that the finest needle could not be introduced between the stones which compose some of the walls of Cuzco.

The general design of the ancient Peruvian building was that of a block built round a court, upon which most of the apartments opened. Many of these were large, and a native historian describes some, of which the remains exist to bear out his statements, as being capable of containing sixty horsemen with room enough to exercise with their lances. The Huacapata, or great square, was surrounded on three sides by great public buildings for the shelter of the inhabitants in bad weather, each of which was capable of containing several thousand people.

The Aclahuasi, or Convent of the Virgins of the Sun, still exists in the convent of Santa Catalina. In this edifice dwelt those maidens who were set apart for the service of the Sun God, and from whose ranks the brides of the Incas were taken. If any of these maidens were detected in a love-affair, death instantly followed, and the youth who had rashly disturbed the sanctity of the convent was also doomed to the dreadful death of being cast from the beetling crags of the "Gate of Death," described in the article on Ollantay-Tampu. Nor did priestly vengeance cease here, for the very village whence the Lothario originated was levelled with the ground as being a nest whence similar vipers might emanate. This conventual establishment is now seven hundred and fifty feet long by from twenty to twenty-five feet high, and its masonic and architectural finish closely resembles that of the Temple of the Sun. The existing walls show no entrance or opening.

A very fine remnant of Inca architecture is the wall looking on to the square called Pampa Maroni. It has been pierced here and there by modern doorways in its length of three hundred and eighty feet, and its joints are so smooth that if the faces of the stones were dressed down flat they could hardly be seen at all. In the street of San Agustin a portion of this wall runs for a

length of eight hundred feet, but it is broken at intervals by modern structures. It formed the north-east side of the palaces of the Yupanqui Incas.

Near the remains of the palace of the Inca Rocca were the Yachahuasi, or schools, founded by that ruler. They were plain, unadorned seminaries, and led down to the terraces of the little river Rodadero. Here the amantes, or wise men, taught the infant mind how to read the language of quipus, or knotted cords, the tales of gods and heroes, music and native engineering and astrology.

In the vicinity of Cuzco, and especially in that of the Rodadero Hill, an eminence more than half a mile in circumference, and at least eighty feet high, several notable terraces exist. Here is to be seen the immense Piedra Causada, or Tired Stone, of which the native historian, Garcilasso, speaks as having required twenty thousand men to move it, and which, rolling over, killed three hundred workmen. This statement is of a piece with much else in the chronicler's rather mendacious "history." The stone weighs probably over a thousand tons, and was certainly never moved by human power. Its upper surface is cut into seats, water reservoirs, niches and staircases, the object of elaborating which will always remain a mystery. The Rodadero Hill itself was shored up into terraces, and its grooved centre, or sunk pathway, was a favourite resort of the Incan youth, who chased each other through the depression on high days and holidays. Most of the stones which faced this eminence have, however, been carried to the town for modern building purposes. But on the summit of this hill are a number of broad stone seats cut into the rock, and rising one above the other with the precision of the benches in a Roman amphitheatre. These are known as the Seat of the Inca, and tradition recounts that the three Incas in whose reigns the mighty fortress of Sacsalmaman was constructed came to these thrones carved in the rocky hillside and from that

THE FALLS OF IGUAZU.

As the traveller in Brazil emerges from the depths of a vast forest he is presented with the spectacle of these magnificent falls.

point of vantage were enabled to watch and superintend the construction of the great work of fortification which was gradually rising up on the mountain-side beyond.

The rocks all over the plateau which stretches beyond the fortress of Sacsalmaman are carved into a myriad shapes. Seats and couches—veritable divans some of these—in stone, niches, flights of steps, basins for catching rain-water, cut with the precision and accuracy of a sculptor, abound. It would seem as if these Cyclopean masons, their vigour unabated upon the completion of the great mountain citadel, had rioted in their art, and had revelled in the execution of countless tasks which might have appalled an army of skilled European artificers equipped with the best and most modern tools. There are traces of many small shrines on this expanse, which probably served as oracles.

Receptacles for the Dead at Lima.—Whilst progressing with construction of a railway at Ancon, Peru, to link that town with Lima, the capital, a cutting in the dunes revealed an ancient burial-place of great extent and interest, from which were obtained an enormous number of objects

THE FALLS OF IGUAZU.

The Alto Parana Falls, which are situated above those of Iguazu.

which have thrown much light upon the antiquities of the country and the habits of life of the ancient Peruvians. They include examples of the textile arts, pottery, utensils, implements and arms, and had all been deposited with the dead. Owing to the dry nature of the climate they were recovered in excellent condition. With them were found many mummified bodies wrapped in sackcloth, one bundle containing in several instances more than one body, and even a whole family, a rough presentment of a human head surmounting the package, which was generally squeezed into something resembling the human form. Within these wraps were discovered the various implements which were placed with the dead for the purpose of proving useful to them in their future lives.

Falls of the Iguazu.—The famous Falls of the Iguazu, partly in Brazilian and partly in Argentine territory, are almost equal in awe-inspiring magnificence to the Falls of Niagara and Victoria Nyanza, and are caused by the rapid descent of the River Iguazu, an affluent of the Parana, into a gulf some four hundred feet deep. This is known as the Victoria Falls. Above this point the Parana sweeps onwards with terrible rapidity, and forms several cascades of from thirty to forty

FALLS OF IGUAZU.

Only about a score of Europeans have seen these wonderful falls, which are situated partly in Brazil, and partly in Argentina. It is difficult to obtain their exact dimensions, but it is probable that they are next in magnitude to the Niagara and Victoria Nyanza falls.

THE PIEDRA PARADE.

This peculiar freak of glacial action is situated in the Argentine Republic, and has been carried to its present position from the surrounding mountains by the action of prehistoric ice, which has worn away its under sides.

feet high, known as the "Seven Falls." This, however, is scarcely a precise enumeration, as a number of smaller cascades occur from point to point ere the Falls of Iguazu are reached. Countless currents form miniature maelströms at the foot of these stupendous rapids, and from the descent of this enormous mass of water arises a constant haze of spray. In the torrent beneath great tree-trunks spin and whirl like straws in a gutter, while above the river flows so rapidly that it is extremely difficult for craft of any size to make headway against it. The incessant thunder of the falls can be heard at a distance of at least two miles. A body of water of almost a thousand cubic feet per second is precipitated adown the rocky gorge of the Iguazu, and the sublime spectacle presented by its descent can hardly be equalled by that of Niagara itself. Indeed, some authorities place Iguazu before Niagara. But very little is known concerning these vast water falls, and only some twenty odd Europeans have ever set eyes upon them. Issuing from the depths of the primeval forest, the traveller is suddenly stunned by the sight of the vast panorama of boiling and tumbling waters which presents itself to his gaze. He emerges from the forest upon an open grassy space, overlooking a great rocky channel cleft in twain by the mighty descent of multitudinous waters. Above this direct fall is a long, gentle curve of foaming white waters, known as the Argentine Horseshoe. As showing the vast compression of the water that finds its way down the cataract, the river above has a breadth of three thousand feet, and the gorge into which it falls is but four hundred feet in width. The Falls of Iguazu are of most unusual shape when compared with similar cataracts. There is first the great Argentine Horseshoe Fall, a double fall of some one hundred and eighty-nine feet. The Brazilian Fall is estimated by some at two hundred and ten feet, though this is almost certainly an exaggeration. The lightness and airy elegance of the falls is said to distinguish them from all other similar bodies of water in the world. The "loop" on the Brazilian side is locally known as "Boca del Diablo" or "Mouth of the Devil," from which rises up eternally a pillar of white spray which is visible for a considerable distance.

The Piedra Parade in the Rio Alta Chubut.—This huge block of granite, situated near the River Chubut, in the Argentine Republic, well exemplifies the tectonic and glacial origin of the surrounding country. It has undoubtedly been carried to its present position some hundreds of yards from the hills which encircle it by the action of a glacial moraine, which, latterly unable to move the mass it carried down from the slopes above, flowed around it, and thus wore away the under sides, giving it the appearance of a huge mushroom. It is about seventeen feet high by twenty at its broadest

point. It is called the "Walking Stone," probably because the natives believed that by no other agency than its own could it have been brought to the spot where it now stands.

The Avenue of Palms at Rio.—The famous Avenue of Palm-trees in the Botanical Gardens at Botafogo, a suburb of Rio de Janeiro, the capital of Brazil, lies in a recess of the mountains at the foot of Corcovado, and thus is screened from winds in all directions—a necessity for the existence of such tall trees in Rio, where the winds are sometimes very boisterous. The avenue is fully two hundred feet in height, and is so symmetrical that, standing a few yards behind the end, the first tree hides the entire row of seventy or more which stand behind it. This wonderful avenue is without doubt unequalled anywhere in the world.

This magnificent alley extends from the main entrance of the gardens for a distance of nearly half a mile. It is composed of one hundred and fifty palms of the species invariably alluded to in Brazil as *real*, or royal, all of which are of uniform height. It is this wonderful uniformity, indeed, which makes the avenue such a marvel of arboriculture. It is crossed at right angles by what is known as the "Alley of Palms," which extends to nearly two thousand feet, and numbers one hundred and forty-two trees of an average height of seventy-five feet. The tropical brilliance of the surroundings is unsurpassed, and the airy play of numerous fountains and jets neutralizes greatly the dank heat engendered by the proximity of such a mass of southern vegetation. Alas! that this magnificent garden, the most remarkable horticultural enclosure in the world, should be practically neglected by the inhabitants of Rio, who seem to prefer the crowded thoroughfares of the city and the amenities of the boulevard and the café to this stately pleasance, to enrich which the rarest treasures of nature have been culled from all lands.

The "Inca Bridge" in the Andes.—The Rumichaca arch, still popularly known as the "Inca's Bridge," although the Incas had no hand in its construction, is a natural curiosity which spans the rushing torrent of the River Carchi, the name given to the upper course of the River Guaitara, which flows from the Pasto volcano in Colombia, and forms for some distance the political frontier between Colombia and Ecuador.

There is a similar arch, also a freak of nature, on the road between Santiago and Mendoza, in Chili, and, curiously enough, it is also known as the "Inca Bridge." The road on which it occurs was probably a colonial way made by the Peruvian Incas, who took advantage of the phenomenon by leading their road over this natural viaduct.

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THE AVENUE OF PALMS, RIO DE JANEIRO

This wonderful avenue of palm trees, which tower over 200 feet in height, is unrivalled in the world, and is perhaps the most notable sight in the Brazilian Republic.

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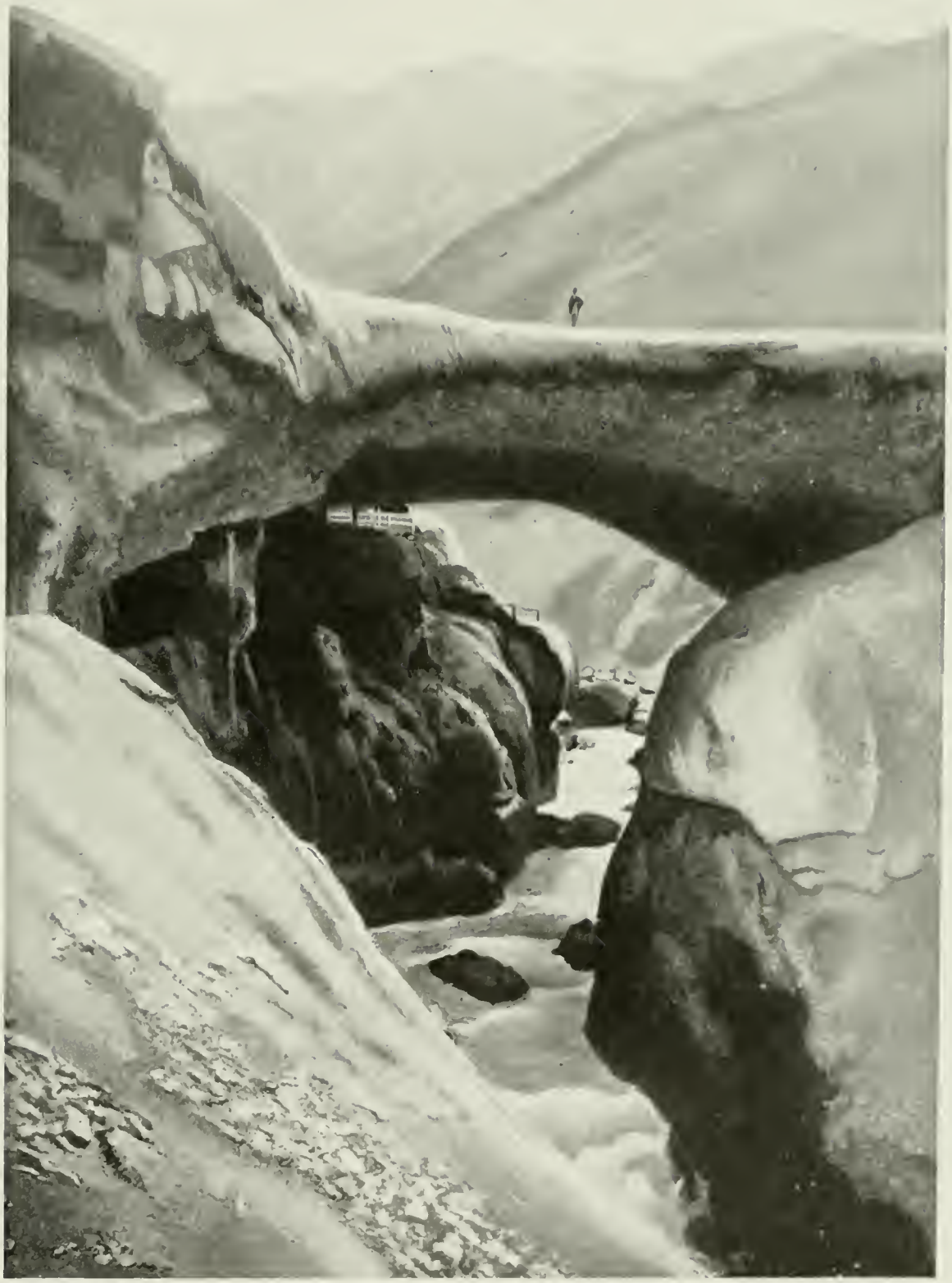
THE AVENUE OF PALMS, RIO DE JANEIRO.

The avenue is composed of 150 splendid specimens of the "Royal" palms.

The name "Chaca" signifies "bridge" in the Quichua tongue. At the foot of the contiguous volcano of Cumbal flows the Rio Blanco, which traverses a series of trachytic rocks, of which the Rumichaca is part. The Bridge passes over the road between Ipiales, in Colombia, to Tulcan, in Ecuador, and has been for generations connected with the name of the Peruvian Incas by the people of the district. Underneath it the river flows swiftly at a depth of about ninety feet. The trachytic rock of which the Bridge is composed is a mixture of calcareous sediment and volcanic débris, the first-mentioned ingredient forming a very hard cement. Near the Bridge has been discovered an entire house built from blocks of this calcareous cement dried in the sun, but its history is unknown. In the neighbourhood is found the celebrated "licamancha," a white carbonate, much in demand for use in setting fractured bones.

Mount Misti.—Mount Misti is by far the best known and most conspicuous summit of the Western Cordillera of Peru. There is great discrepancy in the various estimates of its altitude, which range between seventeen thousand nine hundred and twenty thousand two hundred and sixty feet. This soaring peak directly overshadows the town of Arequipa, a centre notable for the frequency and severity of its earthquakes, which in 1600 and 1868 nearly levelled it with the ground. The native designation of Mount Misti is Sucahuaya. The situation of such a famous volcano directly above one of the most thriving commercial centres in Peru is even more anomalous than the presence of Vesuvius near a modern European city like Naples. From time immemorial the crater of this famous earthquake-maker has been a veritable cauldron of unrest for the unfortunate city which lies beneath its snow-topped mass. Misti has been ascended on several occasions, notably by Weddell, who first climbed it in 1847, and by Ryder and Bothwell, who unfortunately lost their lives in one of its frightful crevasses.

The Misti is flanked by the peak of Pichu-pichu on the east, and that of Chacchani on the north, but its white-crested cone dominates the landscape. A weird legend hangs about its virgin whiteness. In the long ago, when the red breath from its bowels devastated the surrounding country and made life well-nigh impossible for the trembling peasants who dwelt beneath its shadow, the Children of the Sun besought their celestial Father to slay the monster who dwelt within, and whose wrath found such terrible expression. The Sun, the benevolent deity, exasperated at the wickedness of the evil genius who made the volcano his home, drowned him in



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THE INCA BRIDGE, ARGENTINA.

The Rio Mendoza flows beneath this wonderful structure, which is the work of Nature, not, as was popularly supposed, of the Incas.

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MOUNT MISTI, AREQUIPA.

The volcano of Misti overlooks the city of Arequipa, in Peru, much as Vesuvius overlooks Naples, and has on several occasions reduced it to ruins by terrific outbursts.

the depths of his own lava, and sealed up the crater of Misti with snow more impenetrable than adamant, so that the dead Titan might never more be brought to life by any other evil agency. Another legend says that St. Thomas, often associated with the traditional pre-Columbian discovery of America, was preaching in the neighbourhood, and became so irritated at the destructive tendency of the volcano, that he cast his sandal into its depths, thus rendering it incapable of further mischief. Pizarro, the conqueror of Peru, found the neighbourhood of the Misti so healthy, that none of his troops died during the ten months they were stationed there, and this fact weighed heavily with the colonial Spaniards in the selection and settlement of the site of the city of Arequipa.

The Indian Village of Maracaibo.—The Indian village of Maracaibo, situated at the mouth of the lagoon of the same name, affords in one of its vicinities the prospect of native dwellings built upon piles. The community which preserves this archaic style of dwelling is called Santa Rosa, and is built on the plan which prompted the early discoverers of the country to denominate it Venezuela (or Little Venice). When Vespucci and Hojeda discovered it in 1499, they observed this aquatic community, and the waterways between the houses, with the canoes tied to the posts, so strongly reminded them of Venice, that they at once decided to name the new country after the picturesque water-city of the Adriatic. Like the habitations of the prehistoric lake-dwellers of Switzerland or the huts of certain tribes of Borneo, the houses of the Goajiros Indians who live in Santa Rosa are built upon high piles driven into the bed of the lagoon. This custom probably originated through the fear of wild beasts or the visitations of hostile tribes. The dwellings are raised some fifteen feet above the level of the lake, and are merely low huts roofed with sedge or grass thatch, the eaves of which overlap the piles on which the hut stands. From a doorway a ladder leads down to the water, and communication with the various parts of the village is made by canoe. Larger and more ornate huts serve as churches to the Indians, who for the most part live by the chase of waterfowl.

Inca Ruins, Ollantay-Tampu.—The great Incan fortress of Ollantay-Tampu, situated some forty-five miles north of Cuzco, was built to defend the Valley of the Yucay from the inroads of the ferocious Chinchos Indians, who dwelt in the impenetrable forests watered by the Amazon and its tributaries. The immensity of the walls, which are built for the most part of red porphyry and average twenty-five

feet in height, render this ancient fortress comparable to the mightiest structures of antiquity in the Old World. Squier compared Ollantay-Tampu to the castles of the Rhine. The comparison holds good only inasmuch as the Peruvian fortress, like the more graceful strongholds of Germany, is perched upon a dizzy height, which on one side overhangs a deep and rapid river. Stupendous walls zig-zag from point to point, from angle to angle, of a huge cliff, and seem more like the work of some modern master of the art of fortification than the cyclopean labour of the countless throngs of dark-skinned toilers who reared it long ago at the behest of their celestial ruler, the Inca. The fortress proper is a long, low building of two stories in height, loopholed and turreted. Above this tower the walls of another fortress, or rather outwork, and at points above, below, at every possible elevation, are placed round towers of stone of varying sizes, all of which are provided with many portholes, so that a heavy flight of arrows might be brought to bear upon an approaching enemy. This salient outwork embraces a series of terraces, which, because of their peculiar and gigantic structure, are world-famous. The road to these leads through an ancient gateway grooved for a portcullis. The terraces are ascended on one side by steps, and on the other by an inclined plane over half a mile in length, over which the gigantic stones of which the fortress is composed were dragged by sweating bands of conquered provincials. Many of the immense stones used in the construction of the fortress still remain upon this road, abandoned, perhaps, by reason of flaws or other unfitness. This plane is guarded at intervals by square stone buildings, like blockhouses, and is supported by an embankment of stone inclining inwards, and more than sixty feet high.

The first line of defence climbs the mountain-side, zig-zagging from point to point, until it meets a precipice with a sheer fall of a thousand feet. This wall, about twenty-five feet in height, is built of unfaced stone, cemented on each side, and provided with an inner shelf, upon which the defenders might stand. Within this wall is a concretion of huddled buildings, doorways, isolated blocks of porphyry, terraces of vast design, and several fine stairways, the stone for all of which was quarried some seven miles away, in a spot upwards of three thousand feet above the valley, and dragged up the steep slopes of Ollantay by sheer human force. A number of the stones which lie scattered about are hewn into shape and ready to be fitted, and many are morticed and clamped

Photo by] [*H. C. White Co.*

INDIAN VILLAGE, MARACAIBO.

It was from the pile-built abodes of this community of lake-dwellers that the discoverers of Venezuela received the suggestion for the name of the new colony, which signifies "Little Venice." Lacustrine dwellings are now exceptionally rare, the only other known instances of their occurrence being in some of the lesser-known parts of Borneo.

to permit them to be joined to others. Some of these blocks approach twenty feet in length, by five feet broad and four feet deep, and are perfectly squared and admirably polished, and the joints where they meet one another are scarcely perceptible. Six of these mighty blocks, which seem as if quarried by Titans, support a terrace, placed at an inclination against it. The faces of these are imperfectly polished, and some are not even properly hewn, showing that the work of facing them was never completed, and probably hurriedly abandoned. But the greatest of the monolithic marvels which Ollantay has to show are the " Tired Stones," enormous blocks lying on the inclined plane leading to the fortress, as if abandoned by the masons, who found it impossible to drag such monstrous burdens up the face of the hill. One of them is twenty-one feet five inches long, by fifteen

Photo by permission of] [*Sir Clements Markham.*

OLLANTAY-TAMPU.

This illustration gives a good idea of the massive blocks which were employed in the construction of the fortress of Ollantay-Tampu. The stones were fitted with great nicety, and were held together by their own weight.

feet broad, and is partially embedded in the soil, into which it must have sunk by reason of its own weight.

The picturesque splendour of the view from the heights of Ollantay is unsurpassed. Terrace on terrace slopes down to the brawling torrent beneath, each a garden in itself, and level as champaign country. Opposing the declivity on which the fortress is built, the bare, bleak mountains rise in solemn majesty, swelling with their snow-fed rivulets the turbulent stream beneath. Looking down the valley, the view of green terraces is barred by the snow-capped immensity of Mount Chicon, and in the near distance the mountain of Pinculluna, or " Hill of Flutes," a sheer mass of broken rock, several thousand feet in height, stands black against the sky. To its sides adhere several buildings, some of which appear almost inaccessible. Of these, perhaps the most remarkable is the " School of the Virgins," a nunnery where the Peruvian maidens set apart for sacred offices dwelt in seclusion. It consists of five long buildings, rising one above the other, each upon a separate

Photo by permission of] *[Sir Clements Markham.*

OLLANTAY-TAMPU. (ENTRANCE.)

The entrance to the Incan fortress of Ollantay-Tampu. It exhibits a more early type of Inca masonry than the walls of Cuzco, and shows how the architect desired to break the monotony of the line of wall by the introduction of niches.

Photo by permission of] [Sir Clements Markham.

DOORWAY AT FOOT OF SLOPE, OLLANTAY-TAMPU.

The illustration depicts one of these double doorways which are typical of the later Incan architecture of Peru.

terrace. On a ledge with a sheer drop of nearly a thousand feet, stands the Horca del Hombre, a small building, the doorway of which looks down upon the dizzy abyss beneath. From this grim portal male criminals were hurled in expiation of their misdeeds. A ledge higher up holds the prison buildings, where the unfortunate malefactors awaited their doom. A chasm in the mountain-side separates these structures from the Horca de Mujir, from which female criminals were cast, and where those virgins of the sun who had proved false to their vows were hurled upon the rocks a thousand feet below.

In Ollantay-Tampu itself the Mañay-Racay, or "Court of Petitions," remains in almost perfect condition, as is another Inca building, two stories in height. It is built of large stones laid in cement, and was originally stuccoed both inside and out. A central wall runs from gable to gable, and divides it into two apartments of equal dimensions. There was no access to the upper story from the interior, but one of the gables has two entrances to it, one for each half of the building, to which ascent was made probably by ladders.

The ancient town was laid out with great precision and regularity, the streets running parallel with the river, and averaging about fourteen feet in width. Each block was surrounded by a high wall, and two central and three smaller courts lent space to the interior, but only one doorway gave access to the whole.

Tradition has it that in Ollantay-Tampu the chieftain Ollantay, to whom the Inca had refused his daughter Curi-Coyllur ("Joyful Star"), raised the standard of rebellion, and held out against the royal power for ten years. Surprised by a stratagem, he was captured and taken to Cuzco, the capital, but the unfriendly Inca had died, and his successor, touched by the prisoner's sad story, set him at liberty, and gave him Curi-Coyllur—who during this period had been confined in the Convent of the Vestals—to wife. Such is the story as related in the great Incan drama of *Ollantay*, the most perfect specimen of aboriginal American theatric art that has come down to us.

The Andes Mountains.—The vast range of the Andes Mountains has been well described as "the backbone of the South American Continent." They constitute the most regular mountain range on the globe, and some of their peaks are among the loftiest. From the continent's most southerly point to Tacna, in Peru, the Andes run almost due north and south, and from the latter

point to the Isthmus of Panama they describe a vast semi-circle. But for their entire course they adhere closely to the coast-line, and so regular is their march with it, that the Spaniards bestowed upon the range the name "Cordillera," or "rope," to signify the regularity with which it has been drawn in a line with the coast. From the sea this great barrier has the appearance of a vast wall, surmounted here and there by lofty towers, wherever a peak of unusual height looms upwards from among the surrounding mountains. This wall-like appearance is due to the great uniformity of the range, which averages fourteen thousand feet. So uniform, too, is the geological formation of the Andes, that specimens of its rocks brought from points widely distant have been found to display the same features.

Of this wonderfully symmetrical mountain chain, the highest peak is Aconcagua (23,080 feet), unless the claims of Sorata, in Bolivia, to a height of 23,500 feet be allowed. Other giants of the range are Illimani, 22,500 feet; Tupungato, 22,000 feet and Chimborazo, 20,498 feet.

Beginning at the northern extremity of the continent, the Colombian Andes spread out into three distinct ranges—the Eastern, Central and Western Cordilleras. Of the first-mentioned, the Sierra de Summa Paz, or "Mountain of Highest Peace" (14,146 feet), is the most remarkable, owing its denomination, as it does, to the serene splendour of its aspect and surroundings. The Central Colombian Cordillera is volcanic in character, and one of its eminences, Pasto (14,000 feet), discharges from its enormous crater a copious stream impregnated with sulphuric acid. Another volcanic peak of this chain is Puracé (16,000 feet), from the sides of which the Rio Pasambria, or "Vinegar River," a stream highly charged with sulphuric and other acids, falls into a gorge two hundred and

Photo by permission of] [*Sir Clements Markham.*

IMMENSE CORNER-STONE, OLLANTAY-TAMPU.

Another of the immense corner-stones of the great Incan fortress of Ollantay-Tampu. Note the turrets behind, which are said to give the fortress a resemblance to the picturesque castles of the Rhine.

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IN THE HEART OF THE ANDES.

The view looking down from Oroya into the Rimac River Gorge.

sixty feet deep. Tolima, the chief peak of this sub-range (18,400 feet), is not active as a volcano, but several smaller cones have lately formed on its slopes. The twin-crested Yarumal (7,470 feet and 7,230 feet) completes the range. The Western Colombian Cordillera is also known as the Choco range, from the name of the Indian tribe who formerly dwelt under its shadow. Beneath it in a rocky valley, several thousand feet in depth, flows the River Canea. On the slopes of the Cerro Torra (12,000 feet) gold has been discovered.

Within the borders of Peru the Andes uplands broaden out into a vast tableland, which spreads into Bolivian territory, and approaches in extent and height the great plateau of Tibet. The Peruvian system, however, develops its greatest elevation in the lofty crests of the Cordillera Negra and the Cordillera Nevada, the first of which has an average altitude of 16,000 feet and the latter of 18,000 feet. The loftiest pinnacle of the Nevada range is the mighty twin-peaked Huascan, which towers to a height of 22,000 feet. In the neighbouring Cerro de Pasco the alpine grandeur of the scenery is well-nigh overpowering in its stern magnificence. A very chaos of irregular mountain peaks fronts the eye, their snow-covered summits seeming like giant billows capped with foam. The sublimity of this grand and rugged expanse is well-nigh terrifying in its bleak and awesome majesty. In the lands which lie at the base of these mountains a singular variety of scenery is noticeable. This has been remarked by Mr. E. G. Squier, who says, concerning this strange diversity: "Deserts as bare and repulsive as those of the Sahara alternate with valleys as luxuriant as those of Italy. Lofty mountains, crowned with eternal snow, lift high their rugged sides over bleak, black paramos, or table-lands, themselves more elevated than the summits of the Alleghanies. Rivers taking their rise among melting snow, precipitate themselves through deep and rocky gorges into the Pacific, or meander with gentle current among the majestic Andes, to swell the flood of the Amazon."

Photo from the collection of [*J. H. Dauber, Esq., F.R.G.S.*

THE VENTANA.

The Ventana, or window, is a peculiarity of the mountain range of the same name. The mountain peak has been hollowed out by the action of the elements upon soft rock.

It was among these lofty solitudes that the ancient Incan Peruvians believed their Thunder-god to dwell. Among the dense clouds that overhung the mountain peaks his red limbs could be seen swiftly moving, and his giant voice could be heard in god-like wrath. And even to-day the Peruvian

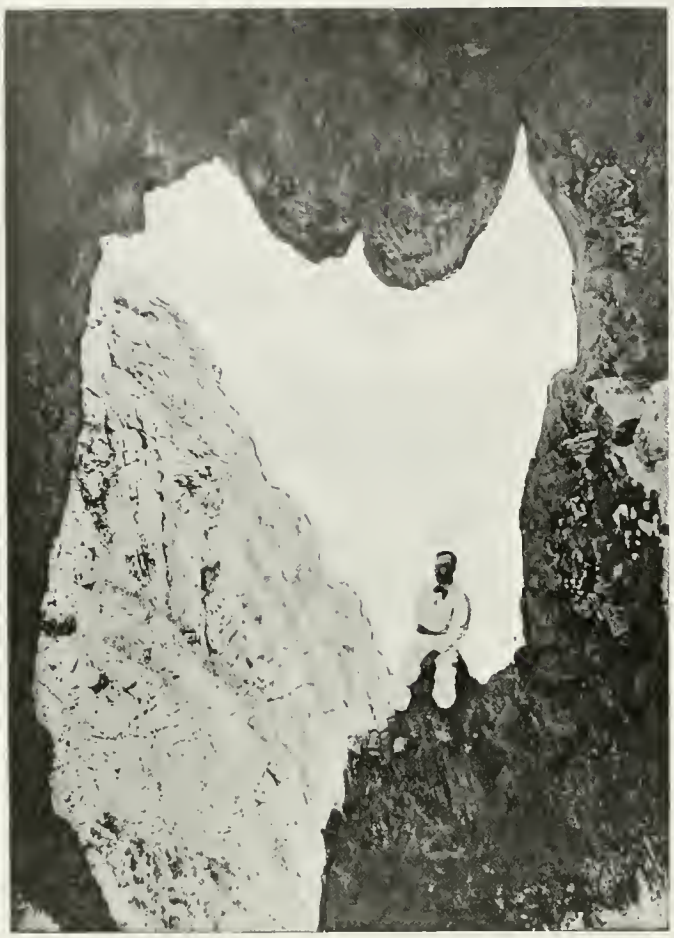


Photo from the collection of [*J. H. Dauber, Esq., F.R.G.S.*

THE VENTANA.

A comparison of this orifice with the seated figure to the right of the picture will give a rough idea of its size.

hillmen pour libations of native spirit into the mountain tarns above the snow-line for the purpose of placating the dreaded being who dwells on the peaks above. For his sacred bird, the condor which inhabits these wastes, they have a superstitious veneration. This bird is a species of vulture, and its head and form may be seen traced on the objects recovered from ancient Peruvian graves. It was one of the chief symbols in the Incan insignia of royalty, and its likeness is carved upon the great monolithic doorway at Tiahuanaco.

It is in Chilian territory that the Cordillera begins its magnificent march of three thousand miles to the Straits of Magellan, and here it is that the highest peaks, the largest extinct volcanoes and the most enormous glaciers are to be discovered. Here are Aconcagua, and the as yet unconquered Cerro del Mercedario, which has never yielded to the foot of the explorer. At such heights as the summits of these extinct volcanoes attain—an average of nearly 23,000 feet—protracted existence is impossible, and the dreaded "gruna," or mountain sickness, menaces the traveller who is sufficiently rash to attempt the escalade of these dizzy heights. At such an altitude movement is terribly burdensome, and the rate of progress may be stated on the confession of a traveller as about a yard a minute.

Many of the Chilian Andes are still uncharted on any map. Hundreds of miles of these mountains are untrodden and unknown, and many lofty peaks of over twenty thousand feet in height have never been measured or even visited by scientists. The Fitz-Gerald expedition, for example, sighted from the peak of Tupungato a great burning mountain, of which absolutely nothing was known. It seems strange, in these days of exploration, that a single yard of the earth's surface should remain unknown; and it cannot be long before these isolated summits yield themselves to the all-conquering foot of man.

The Ventana.—The Sierra Ventana, or Window Mountain range, south of the Plate estuary, in Argentina, derives its name from an opening in the summit of the range which measures four metres in width and ten in height, and is surmounted by a dome twelve metres in thickness. The opening is twenty metres in length. It is most likely that this phenomenon has been caused by what is known as sub-aerial denudation, a process whereby all mountains are slowly reduced in height by atmospheric action, and by the same process the softer portions of the soil or rock would be slowly but surely worn away by the action of wind and rain. The Ventana range has been subjected to a very great amount of weathering, and at one time must have been among the most lofty

ranges on the globe. Their present average height of three thousand eight hundred feet shows how far the process of denudation has gone.

The range is situated at a distance of sixty miles north-north-east of Bahia Blanca, and runs parallel with the Tandil Mountains. It was explored by Hauthal in 1892, and he corroborated the opinion of Reclus regarding the extreme antiquity of these mountains. It is possible that the "window," or aperture, which is so striking a feature of this range, has been caused by violent glacial action, which actually tunnelled the peak from side to side, and formed the opening which gives the system its name, and which stands as a marvel unique in the history of geology.

Kaieteur Falls.—The great falls of Kaieteur in British Guiana are formed by the descent of the Potaro River into a gulf some two hundred and thirty feet in depth. Until the year 1868 they were practically unknown to Europeans. They present a wonderful picture to the traveller as he emerges from the forest by which they are surrounded. The great river is arrested in the middle of its course and hurled into the abyss beneath, where a steam as from a boiling cauldron arises from the strife of waters. Five hundred cubic feet of water plunge every minute into the fearful depths below, where numerous jagged rocks and ledges churn it into rapids and send it sweeping onwards at a fearful pace. Further down the Potaro descends again and again by a succession of cascades. Altogether, with the grand fall, the river descends for over three hundred feet and in its fall gradually increases to a speed of nearly twenty-five miles an hour. There is reason to believe, however, that the constant wearing of the rocks down which it rushes has considerably minimized the original height of the fall, and this within comparatively recent times, as the rocks over which it thunders are soft and very friable in composition. For the same reason the gulf below is being gradually deepened, and this to some extent compensates for the loss of height when measured from the summit of the falls.

Photo by] [*C. Wilgress Anderson.*

KAIETEUR FALLS, BRITISH GUIANA.

Unknown to the traveller till they were discovered in 1868, these falls are formed by the descent of the Potaro River into a gulf of over 200 feet in depth.

Rio Harbour and the Sugar-loaf Mountain.—The entrance to the harbour of Rio de Janeiro, the capital of the United States of Brazil, affords a panorama of unsurpassed beauty to the voyager who views it from the deck of an incoming liner, or from any of the numerous vantage-points which surround the city. The peculiar effect of the view is contributed to as much by the unique nature of the surroundings as by their intrinsic beauty. From a vast sea-basin surrounded by lofty mountains and laving the promenades of a city of dazzling whiteness arise strange islands, resembling nothing so much as the peaks of a submerged Alpine range. Of these many are quite bare, but others, covered by luxuriant tropical foliage, seem as floating forests. After passing the islands situated at the mouth of the estuary, the full splendour of the Gulf of Botafogo bursts upon the view. On the left rises the fantastic peak of Gavea, the summit of which consists of a mass of highly-polished rock. Beyond is the truncated summit of Andarahy, of a sombre blue colour. Further from the shore the Corcovado needle, a stony line of naked rock, runs parallel with the coast.

The shores which slope from these heights present a spectacle of fairy-like loveliness which

THE HARBOUR, RIO DE JANEIRO.

Brazil has been favoured with one of the most wonderful natural harbours in the world; for the bay of Rio has a mouth less than a mile wide, but is deep enough for the largest vessels, and can easily be defended.

would tax the descriptive powers of a Shelley. Beholding them, one is irresistibly reminded of the strange beaches sung by him in "Alastor" :

Lo, where the pass expands
Its stony jaws, the abrupt mountain breaks,
And seems with its accumulated crags,
To overhang the world : for wide expand
Beneath the wan stars and descending moon
Islanded seas, blue mountains, mighty streams,
Dim tracks and vast, robed in the lustrous gloom
Of leaden-coloured even, and fiery hills
Mingling their flames with twilight, on the verge
Of the remote horizon.

The silver of sand and the sapphire of sea, the long ridges of snowy foam, the myriad tints of rock and weed softening into the haze where the white city lies, afford a scene of loveliness to tired eyes unequalled even by the dazzling lagoons of the islands of the Pacific. Beyond rises the gigantic monolith of the Pão do Assucar, or the Sugar-loaf Mount, conical, isolated, colossal. This unique mountain rises from a peninsula which fronts the Gulf of Botafogo.

The Sugar-loaf Mountain is nine hundred and ten feet high, and with the surrounding mountains is supposed to make up a resemblance to the human form, called the "Stone Man," of which it constitutes the feet, and Mount Gavea the head, or face in profile. Within this vast oval basin of sea, some thirty miles long by twenty broad, the horizon is everywhere bounded by lofty mountain

Photo by] [*The Detroit Photographic Co.*

THE TANDIL ROCKING-STONE.

This stone is situated among the Tandil Mountains in Argentina. Its vast mass of seven hundred tons of granite is so perfectly poised that it can be vigorously rocked without any fear of its falling.

Photo by permission of] [*Sir Clements Markham.*

THE INCA FORTRESS OF PISSAC.

For the protection of their empire the Incas were forced to erect extensive fortifications at the points most open to assault. One of these was in the Valley of Yucay, which gave access to a headland of the Andes, but which was protected by these mighty forts.

ranges of the most bizarre shape and outline. The numerous islands and surrounding declivities appear as natural fortresses, and the enormous headlands which guard the very entrance to the "harbour" are sufficient guarantee against the passage of hostile war-vessels so long as guns can be mounted upon their summits.

The Tandil Rocking-Stone.—In the Tandil range of mountains south of the River Plate, in Argentina, stands the famous Tandil Rocking-Stone, by far the largest example of the kind in the world, weighing as it does seven hundred tons. It is composed of granite, and contains one hundred and thirty cubic metres. It is in the shape of a paraboloid, four metres high and five metres in diameter at the base. The stone rocks upon a knob of rock beneath, which fits closely into a socket-like hollow in the stone itself. The action of the elements through countless centuries has succeeded in wearing away the softer parts of the stone, and leaving behind the harder-gritted core. The stone is so perfectly balanced that it can be vigorously rocked without any fear of its falling.

The Tandil Stone is so delicately poised that it could crack a nut, yet so firmly fixed that it could not be displaced by a team of a thousand horses which were yoked to it. It is the stone of which this is a "sample" that is employed in the paving of the streets of Buenos Ayres, the municipality of which, before the opening up of the Tandil quarries, had perforce to import some five hundred tons of paving-stone from Genoa.

The Inca Fortress of Pissac.—For the proper protection of their empire and culture the Incas found it necessary to erect extensive fortifications at those points where they were threatened by barbarous peoples, much as the Romans were led to build the walls of Antonine and Hadrian to guard against the incursions of the Picts and Scots, or the civilized Chinese their Great Wall against the furious Tartar inroads.

By the Photochrom Co., Ltd.

ALHAMBRA.

The wonderful mosaics and glazed tile-work contribute considerable charm to this the most beautiful of Moorish Palaces. The decorations here shewn of the Sala de Las Camas are splendid examples of Moorish art.

One of the most wonderful of these mountain fastnesses was that of Pissac, commanding the approach to the valley of Yucay. From the background of the snow-covered Andes juts an oval headland some three miles long, and, at its most elevated point, nearly four thousand feet high. This projection is of the wildest and most rugged description, and from its surface great beetling cliffs start at irregular intervals, alternating with level spaces and gentle slopes. At three points only is it accessible. There is, however, a picturesque stairway from the adjacent town, cut in the living rock, which winds and turns along its face, past dizzy precipices, and projections of rock on which towers were erected whence the garrison could discharge showers of stones upon the invaders.

When the ascent has been made to the higher slopes a number of artificial terraces are encountered which exhibit great skill and a fine sense of regularity. They run down to the very edge of the sheer precipices below and are ascended by flights of steps, by the side of which are narrow aqueducts to supply the water-tanks for the use of the defenders in the fortifications below. As a second line of defence, every possible loophole of entrance is here battlemented and escarped in such a manner as to render access impossible, and round towers crowned with battlements guard every pass.

With regard to the temple group of buildings, the most original and remarkable of these is seen to be the Inti-huatana, or apparatus by which the Incan Peruvians were enabled to discover the seasonal periods of the year. The name signifies "Place where the sun is haltered," or "tied up."

The buildings which surround the Inti-huatana are nearly all oblong in shape and similar to each other in area and construction. That they were dwellings or temples for the priestly class is certain. From the site on which they stand the great central peak of the fortress can be reached. The steep and dizzy path skirts cliffs a thousand feet in height, and upon it it is impossible for two men to walk abreast. Some four hundred yards up the cliff-side the artificial shelf or roadway widens a little, and a flight of steps ascends for one hundred and fifty feet to a little tower perched upon an aery crag. Beyond the tower which commands it, the pathway is excavated through the

Photo by permission of] [*Sir Clements Markham.*

THE INCA FORTRESS OF PISSAC.

The maze of fortifications inside the surrounding wall is extremely elaborate. Every possible loophole of entrance is battlemented and escarped in such a manner as to render access impossible, and round towers crowned with battlements guard every pass.

rock, so that only one person at a time may pass, and that in a crouching position, and by this means only can access be had to the eastern peak of the stronghold, which is much less elaborately fortified. On its summit an area of perhaps a quarter of an acre has been levelled and banked up by cut stones, and this at a height of four thousand two hundred and fifty feet above the valley! From this point signal-fires were lit to warn the inhabitants of Cuzco, the Inca capital, against the approach of the barbarian tribes to the eastward. In the ravine behind the fortress, and between the eminence upon which it is built and the spur of the Andes, are numerous niches and crevices in which the defenders of the fortress slept. These stretch for upwards of a mile, and the place is known as Tantana Marca, "The Steeps of Lamentation." The name might well apply to-day to the empty fortress itself, the mighty monument of a vanished but unforgotten empire.

The Ruins of Tiahuanaco.—Scattered over the Andean slope of Peru are groups of ruins attributed to a prehistoric people who dwelt in the country before the coming of the Incas, and

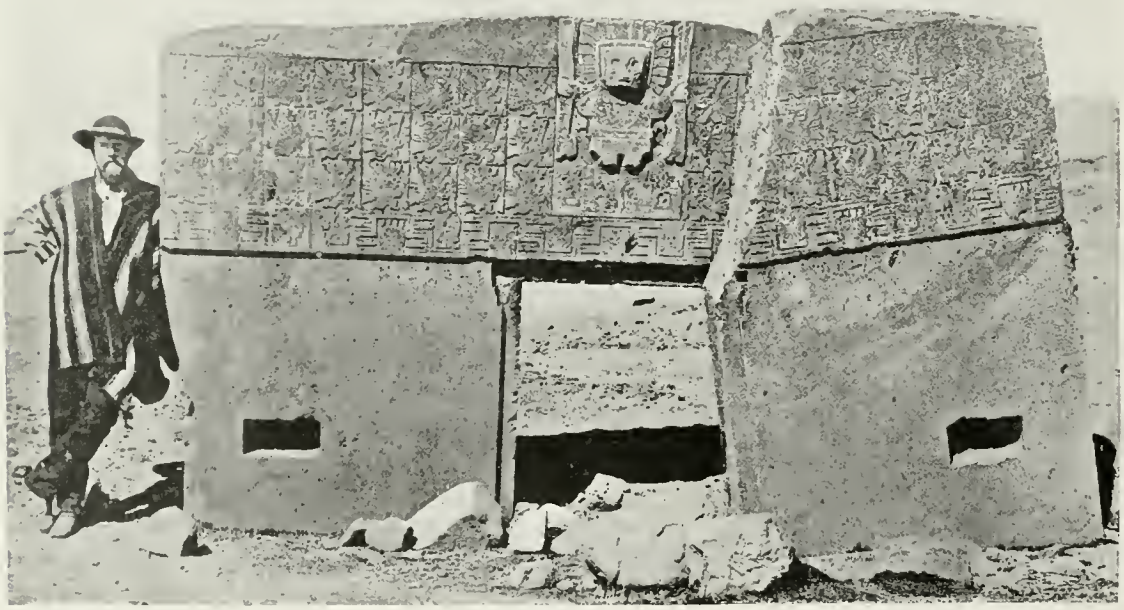


Photo by permission of] [*Verlag von C. T. Wiskott.*

TIAHUANACO.

Scattered over the Andean slope of Peru are groups of ruins attributed to a prehistoric people anterior to the Incas. Chief amongst these ruins is the megalithic doorway of Tiahuanaco carved out of a single block of stone.

consisting principally of buildings of cyclopean type—edifices, temples and doorways constructed from vast stones, in many cases considerably larger than the analogous buildings of the early peoples of Greece or Egypt contain. To this race scientists have given the name "Andean," and although little is known concerning it, it is generally agreed that it has left examples of masonry which it would be difficult to excel for boldness of design and massiveness of execution.

The outstanding characteristics of this masonry are that the stones composing it are fitted into each other with a skill which all the resources of modern workmanship could not improve upon, and that no mortar or cement is employed, bronze clamps taking the place of this in the majority of instances.

Chief among these remarkable ruins are the groups at Tiahuanaco, which is situated on the southern side of Lake Titicaca, thirteen thousand feet above the level of the sea. They cover an area of nearly an acre, and are chiefly famous for the wonderful megalithic doorway, seven feet high and thirteen and a half feet in length, carved out of a single block of trachytic stone. The

Photo by permission of] [*Verlag von C. T. Wiskolt.*

TIAHUANACO.

Details of the sculpture on the "Andean" doorway.

Photo by permission of] *[Verlag von C. T. Wiskolt.*

TIAHUANACO.

Tiahuanaco is situated on the southern side of Lake Titicaca, 13,000 feet above sea-level; and the reason why the prehistoric masons of Peru builded here must remain a mystery.

upper portion of this doorway is covered with sculpture of a most curious type, the central idea representing the sun surrounded by rays, and clasping a sceptre in both hands. These sceptres end in the heads of condors, a species of vulture which is common to the vicinity. On either side of this design rise three tiers of figures, each in a kneeling position, and facing the central figure. All of these are winged and have the heads of condors, except some which obviously represent kings, and who wear the insignia of royalty and sceptres similar to that of the central figure. It is thought that this sculpture was raised to commemorate some remarkable event in the reign of one of the unknown monarchs of a forgotten pre-Incan dynasty, or else was undertaken as an act of homage to some deity. For what reason the prehistoric masons of Peru builded here will probably for ever remain a mystery. The surroundings are perhaps the most unsuitable for the construction of large edifices that could have well been selected, and the region in which they stand is desolate and difficult of access. The tableland upon which they are built is so high above the level of the sea that even breathing is difficult and the line of perpetual snow is near at hand.

On Lake Titicaca, hard by, is an island of the same name, on which are many ruins of surpassing interest. This was the sacred island of the ancient Peruvians, and here the corn was kept in the sacred granaries to be later distributed throughout the land for sowing. Here, too, the Peruvians believed the founders of their civilization to have started upon their pilgrimage of enlightenment. Chief among the buildings are the Palace of the Sun, the abode of the priests who worshipped the luminary, and the Palace of the Incas. The Palace of the Sun was reached by steps cut in the rock, and its façade of one hundred and sixty-five feet was pierced by five doors. On the contignous island of Coati many important ruins are likewise to be found. It was consecrated to the moon, and its edifices included the Palace of the Virgins of the Sun, a plain and almost unsculptured building, on the first story of which two large halls opened upon the principal façade. In the first of these was placed a golden statue of the sun and in the second a silver statue of the moon. The lake was reached by a series of terraces and steps, from which marvellous views of the surrounding lacustrine scenery can be obtained.

EUROPE.

CHAPTER XXI.

By CHARLES RUDY.

Prehistoric Sardinia.—The richest field of research for the archæologist is the Mediterranean, its shores and islands, for prehistoric man roamed through the forests that skirt the Great Inland Sea from far Syria to the coast of Spain, joined in those days to the African continent. When the islands, such as Malta, Corsica, Sicily, the Balearic Isles and Sardinia broke off from the mainland, they were inhabited by tribes who rapidly increased in numbers until they formed the native population of their new home. Practically safe from attack from without—navigation on a big scale being unknown—they were able to create a civilization of their own, and develop it on lines peculiar to their surroundings. When, in subsequent centuries, foreigners approached the shores of these islands, and colonized a fringe of land around the sea, the native element, savage and unreasonable, was driven into the interior, where their civilization lingered until it was completely forgotten, and monuments crumbled and were covered with earth, only to be excavated within the past fifty years. Such is the history of the majority of the Mediterranean Isles, and foremost among these must be placed Malta and Sardinia, the latter the proud possessor of the most perfect, and at the same time the most numerous dwellings of the Neolithic Age. The island must have been densely populated, especially in the centre and north, where huts, villages, tombs and temples have been unearthed, and mounds still to be investigated dot the landscape.

Photo by] [*Underwood & Underwood.*

PREHISTORIC REMAINS, SARDINIA.

This island is the proud possessor of the most perfect, and at the same time the most numerous dwellings of the Neolithic Age. The illustration shows the mouth of a sacred well.

The most frequent remains are those known as the *nuraghi*, over six thousand in number and

generally located on a platform or elevated point of vantage, such as the head of a ravine, tableland, or in the vicinity of a ford. They were the huts of primitive man, and though the upper stories have in most cases fallen, it seems that the original form was that of a truncated cone: in other words, the walls were circular, the diameter growing smaller as the structure rose in height. Among the peculiarities of these huts is the fact that the doors always faced the south, the inmates thus escaping the north winds. In the interior the crevices between the rough blocks of stone which form the wall were daubed with clay. Inside the door, on the right, a niche was cut into the wall, presumably to be occupied by a sentry, who could easily attack an enemy coming into the hall. Should he, however, pass the sentinel, and, crossing the semi-circular hall, attempt to reach the inner room, he would be balked by a staircase, the steps of which were irregular, some only a foot high, others varying from three to four. In many cases security was enhanced by a buttress tower in advance of the hut. In a more complicated form, such as the Nuragho Losa near Abbasanta, a large hut contained another within its precincts, or was surrounded by smaller dwellings, the whole being enclosed in a bastioned wall of primitive structure. Broken bits of pottery, of a black, porous clay, have been found in some of these *nuraghi*, as well as small bronze statues of simple design, and angular, in the nature of Egyptian art. These are, however, of posterior date, belonging to the Bronze Age. Nothing is known of the religion of these primitive men, though several underground excavations seem to indicate the existence of a temple. Close to it is a well, supposed to have been sacred, and it is possible that springs and wells, being of primary importance, should have been worshipped in some way or other. Interesting, also, are the tombs which have been discovered. They are of two kinds: the *domus de gianas*, which closely resemble the rock-hewn cemeteries to be found along the Nile, and the *tombe dei giganti*. These latter were built within sight of a hut, and consist of one chamber, ten to twelve yards long, by a yard high and wide, and lined with huge slabs of stone.

Photo by] [*Underwood & Underwood.*

PREHISTORIC REMAINS, SARDINIA.
The entrance to the Underground Temple.

Photo by] [*Underwood & Underwood.*

THE ST. GOTHARD TUNNEL.

A photograph can only show the entrance of the tunnel, which is one of the greatest engineering feats ever undertaken. It is a maze of loops and spirals, and in one part the line takes the curves of a figure 8.

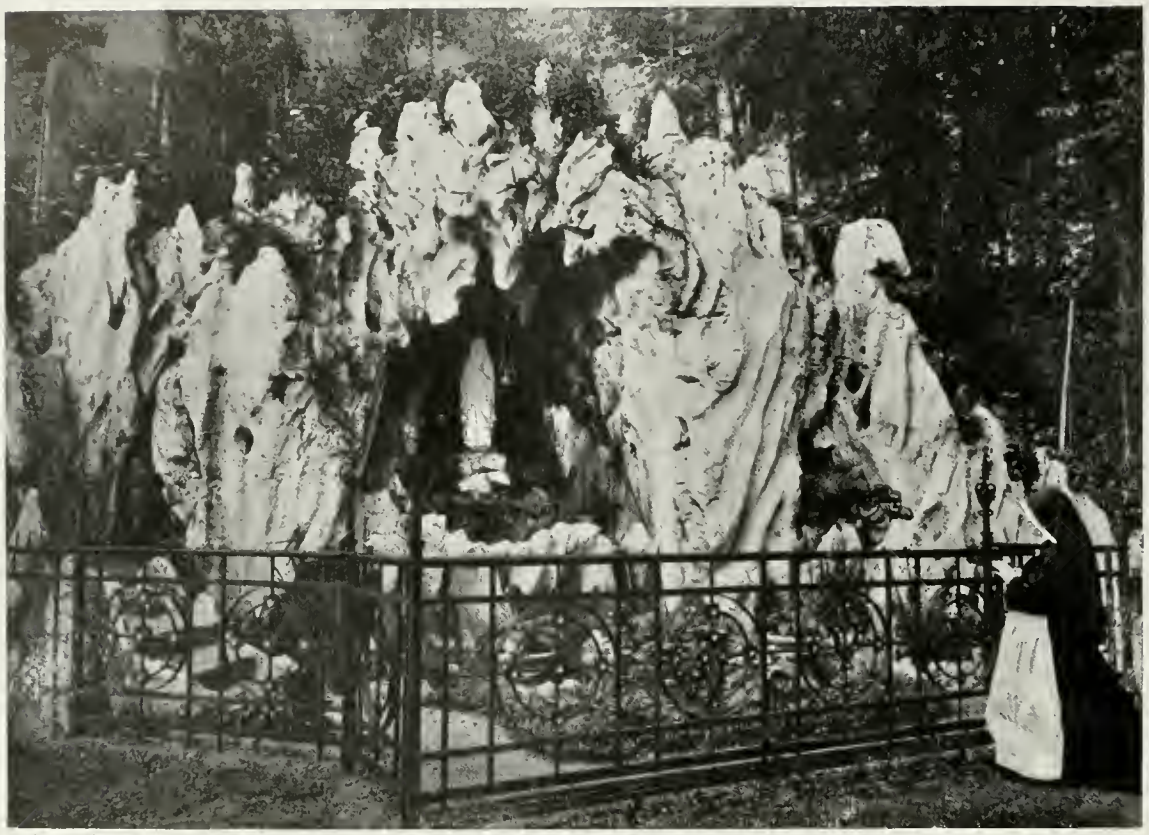


Photo by] [*The Photochrom Co. Ltd.*

THE GROTTO, LOURDES.

Sixty years ago the village of Lourdes was practically unknown, but to-day it is become a Mecca of the Roman Catholics, hundreds of thousands of pilgrims journeying yearly to the miraculous spring.

The St. Gothard.—One of the greatest of engineering feats ever undertaken was the construction of the St. Gothard Railway between Switzerland and Italy. It is not its length—in a bee-line the total distance covered between the Lake of Lucerne and Airola would not exceed fifty miles—that is significant, but the difficulties that had to be overcome in threading gorges, crossing rivers and building tunnels, the latter being the most marvellous mole-holes that the world has ever seen. The writer remembers when he first travelled between Lucerne and Lugano. Opposite him in the corridor car sat an old gentleman armed with a compass, an aneroid barometer and a thermometer. It was a study in facial expression to watch the gleam of satisfaction on the old man's face when, in a tunnel, the compass danced a jig from south to east, to north, to west, and south again, and the aneroid barometer rose from two thousand to three thousand feet, and the thermometer climbed from fifty-five to sixty-five degrees Fahrenheit. But it was in the big tunnel that the excitement in the master scientist's face reached its climax. During the eighteen minutes it took us to cover the nine and a half miles, my *vis-à-vis* had ample leisure to feed his eyes on his instruments. The compass made a circuit from left to right, followed by another from right to left, for the tunnel is built in the figure 8 ; the thermometer showed seventy-three degrees Fahrenheit and the aneroid climbed steadily to three thousand seven hundred and eighty-six feet above the sea, and then began to descend, until when we emerged from this, the second largest tunnel in the world, the needle stood in the vicinity of three thousand feet. For it is a curious fact that the highest point on the line is reached in the very heart of the big tunnel, from which point the line descends in both directions, towards Göschenen in the north and Airola in the south. Until a few years ago the St. Gothard was the largest tunnel in the world, but this honour has now fallen to

the Simplon, which is five thousand three hundred and sixty yards longer. The Simplon, however, is built in a straight line; at a given moment it is seven thousand feet below the crest of the mountains through the base of which it bores its way, and the temperature rises to ninety degrees, which, even on a hot summer's day, is considered a high reading in the shade. Otherwise, the St. Gothard's rival need not be feared; in point of beauty, and the rushing from one scene to another, the older line stands alone among the railways of Europe. It is a veritable study in loops and spirals—three such tunnels being on the northern, and four on the southern incline. In all, there are eighty tunnels, aggregating twenty-eight and a half miles, and there are three hundred and twenty-four bridges of a span over thirty-two feet. The wildest scenery is to the north of Göschenen, where the line endeavours to follow, with more or less success, the roaring Reuss on its way to the Lake of Lucerne. But more impressive is the descent on the Tessin, or Swiss-Italian side. For the winds of the south and its sunshine burst upon the traveller as slowly, creeping snake-like with many a coil, the train loops its way into the fertile plains that lead through Piamonte and the Lombardy to the Eternal City and the basking languor of the bay of Naples. As for the mountain chain of the St. Gothard, only glimpses of it can be obtained from the car, and yet it is one of the many picturesque groups of massive snow-clad granite for which Switzerland is noted. A pass leads over the top of a ridge between two high peaks, and a carriage-road connects the north with the south. A famous hospice stood at the summit of the pass, but it was totally destroyed in a recent fire, and has been rebuilt on more modest and modern lines. The railway has naturally taken the traffic for which the St. Gothard Pass was known, and to-day the tourists who come this way in order to enjoy the view and a bird's-eye glance over the railway lines below them are few and far between.

The Grotto at Lourdes.—In a charming spot, nestling among the northern spurs of the Pyrenees, and not far distant from Pau, stands the Castle of Lourdes, with the village of the same name at its feet, and opposite, on a peninsula formed by a sudden turn in the course of the river Gave de Pau, Mount Calvary rises gradually to an insignificant height. Sixty years ago the village was practically unknown. But a strange thing happened. One, Bernadette Soubirous, a mystic

Photo by permission of] [*Gen. Bertram Mulford.*

ALHAMBRA, GRANADA.

The exterior of the Alhambra belies the interior; it is severe, forbidding-looking and massive. It is nevertheless the masterpiece of Arab architecture.

maiden in her teens, saw the Virgin, dressed in white and wearing a blue scarf, appear to her in a grotto situate at the foot of Mount Calvary, and speak to her, telling her that if a shrine were erected on the spot, the waters in the grotto would acquire healing properties, and thousands of cripples would come from afar and be cured of their ills. Bernadette told the village clergy what she had seen and heard, and then retired into a convent, where she died twenty-one years later. In the meantime the miracle had been noised abroad; the supposed instructions were carried out as they had been given to the mystic, and sufferers began arriving in ever-increasing numbers. Faith is in many cases—as doctors will tell us—a powerful cure, and it is not surprising, therefore, that some of the lame and disabled pilgrims should, after bathing in the waters of the marvellous grotto, drop their crutches and walk away. The fame of the village grew by leaps and bounds, until to-day Lourdes is without a parallel in the contemporary history of the Roman Catholic Church. It is a modern St. James of Campostella, with this difference, that whereas the journey to Galicia in the Middle Ages was both arduous and hazardous, a generous service of special trains brings the pilgrims rapidly to the Grotto at Lourdes, and in such numbers that, from August 15th to September 15th of each year, no fewer than one hundred thousand visitors arrive at the shrine. Of these many are naturally only tourists and sightseers, who take advantage of the excursion tickets to visit some of the beauties of the Pyrenees, stopping a night on their way at the old village at the foot of the castle, now turned into a prison. The fervent pilgrims have, however, little or nothing to do with the right bank of the Gave de Pau. Crossing the new bridge, they huddle together at the foot of Mount Calvary; they gaze at the statue of the Virgin, make their votive offerings, with which the basilica on the hillside is covered; bathe in the ice-cold waters of the spring—no longer visible, but walled in, the crystal-clear waters being led through taps into a basin—and pray that their sufferings may be ended. What a medley of peoples and races is to be seen among the pilgrims on the Esplanade

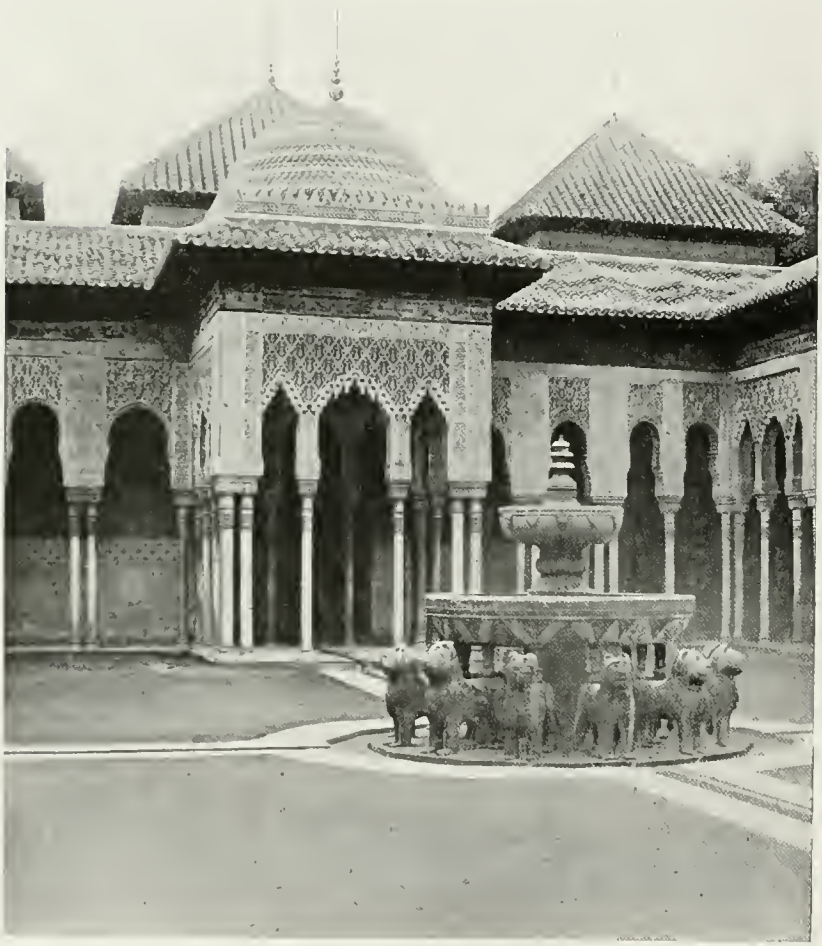
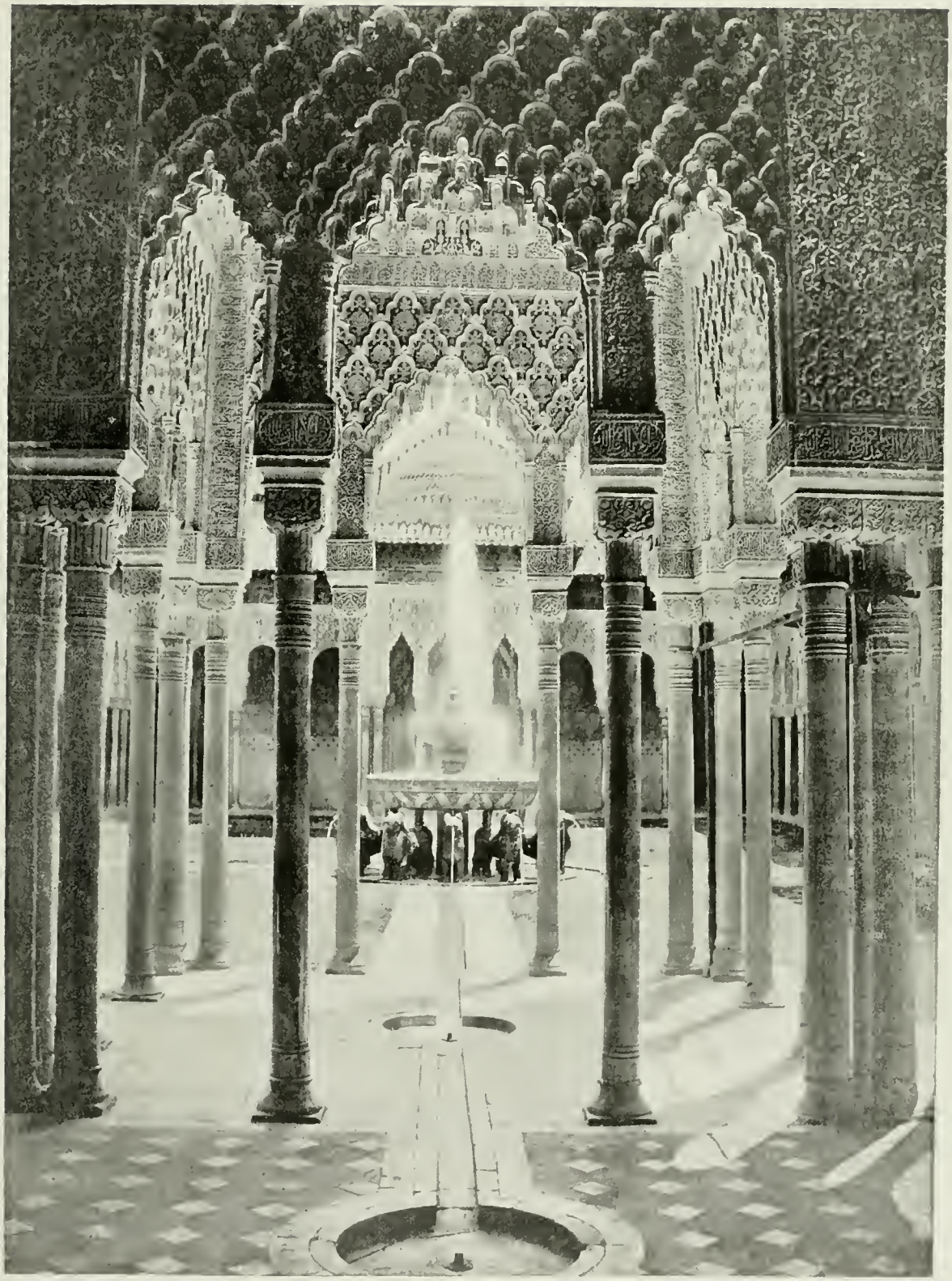


Photo by] [*N. P. Edwards.*

THE COURT OF LIONS, ALHAMBRA.

The use of animals in decorative work is forbidden by the Koran; but here the laxity that often accompanies luxury has allowed the beautifully sculptured fountain that gives its name to the court.



THE COURT OF LIONS, ALHAMBRA.

The effect of the slender columns, now standing singly, now in groups of two or three, is one of exquisite grace and dazzling sunshine and shadow.

Photo by] [*The Photochrom Co. Ltd.*

THE COURT OF THE MYRTLES, ALHAMBRA.

So named from the green myrtles that are planted by the side of the water-basin, which extends throughout the length of the court.

and among the rows of shops where knick-knacks and souvenirs are to be bought! And what misery! Even Jerusalem at Easter is not a more piteous sight, nor does it offer a more varied cacophony of sounds and languages.

The Grotto itself has very little to recommend it beyond its sway as a psychic force in modern Catholicism. The grottos of Bétharram, two miles distant, are both greater and grander. It is a recess fifteen feet deep by fifteen wide, similar to many in the vicinity, where prehistoric remains have been unearthed. Above it, on a projecting rock, stands the effigy of the Virgin, in a white robe and a blue scarf. The Basilica, which has been erected on the hill above the Grotto, was consecrated in 1876, and no fewer than thirty-five princes of the Church were present, headed by the Cardinal-Archbishop of Paris and the Papal Nuncio, who in a solemn moment crowned the statue of Our Lady of Lourdes.

The Alhambra.—The intense poetry of a romantic, oriental race clad Spain in a garb of beauty which still clings to her, in spite of her many vicissitudes. Desertion and desolation have harassed her, but many of the jewels which the Moors—to use a general term—bestowed upon her during their stay in the land of orange-blossoms and olive-trees still shine in her tiara, and of these jewels none can compare with the Alhambra in brilliancy and lustre. It is the "Cullinan" of her regalia, the last and the highest expression of a marvellous art movement which, finding its origin in a white tent on the bank of an oasis pool, passed through Egypt, Sicily and Morocco, and finally reached a climax of voluptuous light and colour in Andalusia. Saracenic art has produced no more perfect specimen of intricate workmanship and rich fantasy than the lone halls of *fécrique* beauty and fading colours crowning the hillside overlooking Granada, the lost city of the Moors.

The exterior view of the Alhambra belies the interior; it is severe, forbidding-looking and massive. Once within the walls the impression is totally different; extreme lightness blends with

a myriad colours, in which the reds and blues predominate, against a background of immaculate white. Fairy-like pillars and columns, surmounted by flimsy arches, delicate as lacework, seem to raise the walls instead of to support them, whilst between them intricate vistas are to be obtained of desolate halls and courts, each apparently more superbly decorated than the preceding. In the height of its fame, just before the fall of Granada in 1492, it must have been a magnificent pleasaunce, of which the few remains, the most elaborate of their kind, are but a tithe of the many rich apartments contained in the Red Castle, when Bobadilla, the 'ast King of Granada, "unable to defend like a man what he wept over like a woman," was compelled to pass over to Africa. At that time flashing fountains of water sparkled in the sunshine and were intermingled with palms and orange-trees planted in the courtyards, which, with their fragile colonnades and variegated colours, were like a tangle of rare flowers; while, in recesses under arcades, the white-robed Saracens lounged on rich oriental rugs, sipping their cooling drinks, and in the hareem the favourite sultana sat in that most wonderful of alcoves, known as the Lindaraja, gazing out across an orange-grove to the fertile fields of the *vega*. To-day most of the fountains are silent, and the colours are paling. The fall of noisy feet is heard on the pavement instead of the sandals of old. But even to-day the halls are beautiful, unique. With a little care and money spent on its maintenance by a sparing government, the life of the stucco ornamentation—consisting for the most part of wonderful stalactites and an ever-changing wall and arch ornamentation—could be prolonged for years to come.

The most perfect in detail and execution of the few remaining halls and courtyards is that part of the building leading off from the Court of Lions, and known as the Hall of the Two Sisters. An elaborately wrought dome crowns the central fountain, and its circular contour is continued to the level of the eye by means of huge stalactites which hang like rainbow-coloured combs dripping with honey. The decorative motives on the walls are richer than elsewhere, the coloured tiles more

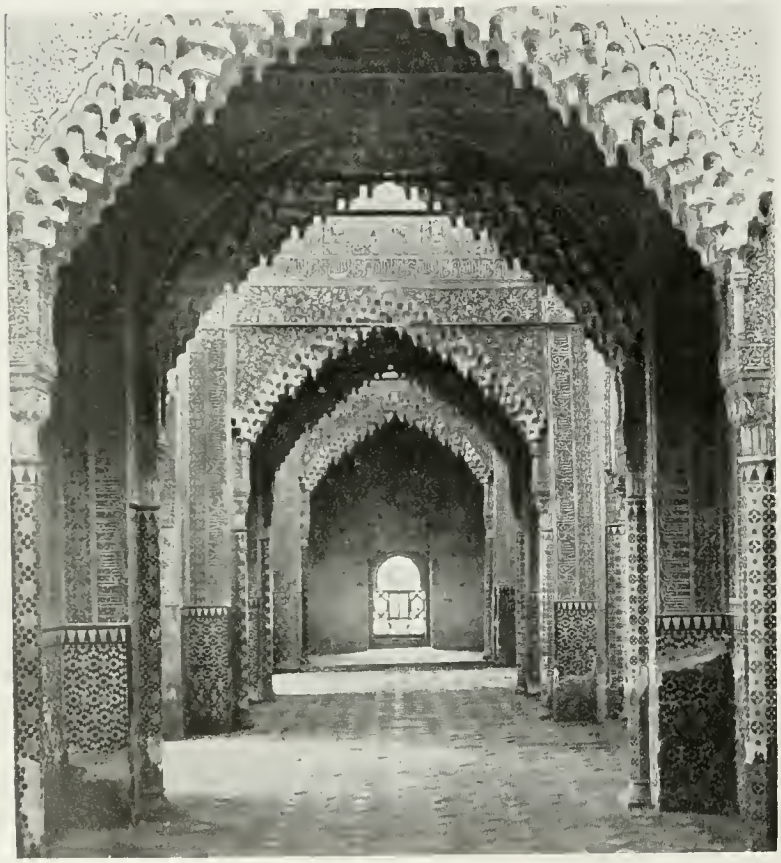
Photo by] [*The Photochrom Co. Ltd.*

THE HALL OF THE AMBASSADORS, ALHAMBRA.

This hall was the throne-room of the Sultans of Granada. Its ornamentation in stucco and glazed tiles was very rich, gold being the predominant colour.

vivid, the filigree stucco work more varied, and the Arabic inscriptions, which are numerous throughout, are more poetic and of more exquisite workmanship.. Doubtless, this was the central hall of the private apartments of the Sultan. Here he sat with his womenfolk, or, if he was engaged in conversation with strangers, the "soft-eyed gazelles" of his hareem could either peep down from behind trellis-work on the delicate upper gallery, or else lounge in some other apartment behind the heavy curtain—now no longer existing—which hid the Lindaraja Alcove from the impertinent gaze of the visitor.

One hundred and twenty-four columns surround the famous Court of the Lions, which dates, as do most of the existing remains of the Alhambra, back to the end of the fourteenth century. An oblong of one hundred and sixteen feet by sixty-six feet, the court is named after the conventional lions of the central fountain. The use of animals and human beings as decorative motives is regarded by strict Moslems as being forbidden by the Koran; but in the Alhambra these motives frequently occur, showing that Christian influence had brought laxity to one at least of the precepts of Islam. The filigree work in the Court of the Lions is less rich in its fantasy than that of the Hall of the Two Sisters; but the effect of the aerial columns, now standing singly, and now in groups of two or three, where they support the two dome-shaped porticoes which protrude from the colonnade, one at each end of the court, is one of dazzling beauty and bewilderment. A companion court, still existing, is that of the Myrtles, or of the Fishpond. Throughout its whole length a basin of water glistens in the sunshine, flanked by two rows of green myrtles; at one end rises a two-storied building supported by the traditional columns, and possessing a running balcony of exquisite lightness. The other end, flanked by richly-tiled alcoves, leads into the Hall of the Ambassadors, seventy-five feet by thirty-seven feet, and surmounted by a graceful dome of painted larch-wood. As in the case of the Hall of the Two Sisters, the dome is encased in a square, strong tower, which, seen from the outside, gives no indication of the extreme fragility and beauty of the interior. The angular effect of the wall has been avoided by drooping stalactites in the corners. Eight horizontal bands of further stucco (or plaster) work run around the hall, followed by a rich ornamentation of glazed tiles, which reach from the floor to the level of the eye. This hall was the throne-room of the Sultans of Granada, and gold was the predominant colour. It was here that, in 1492, the last



From Stereo copyright by] *[H. C. White Co.*

THE COURT OF JUSTICE, ALHAMBRA.

Photo by] *[The Photochrom Co., Ltd.*

THE HALL OF THE TWO SISTERS, ALHAMBRA.

This is the most perfect of the halls leading from the Court of Lions, and was probably the central hall of the private apartments of the Sultans.

Photo by] [The Photochrom Co. Ltd.

MIRADOR DE LINDARAJA, ALHAMBRA.

sorrowful council meeting of the kingdom was held, and a few hours later Granada had surrendered to the Spanish conqueror. Thus the immaculate Alhambra passed into the hands of the victorious enemy, who forthwith destroyed part in order to build a still unfinished palace, and left part, after having despoiled it, to die a lingering death.

The Hypogeum, Malta.—Though the *nuraghi* remains in Sardinia eclipse those found elsewhere, the most important monument belonging to the Neolithic Epoch—supposed by many scientists to date back three thousand years before the dawn of history—is the huge Hypogeum of Malta, composed of a series of irregular monolithic rooms, subterranean and inter-communicating. It was discovered in 1902 by a workman digging for a water-tank, and a year later the authorities proclaimed it public property and excavations were begun. Houses surround the place, and at the time of the discovery of the Hypogeum their water-tanks had been leaking for ages. Part of the Hypogeum was found to be under water, which had to be removed. Refuse also filled many of the rooms, for in the course of centuries the entrance shaft had been used as a convenient place for refuse matter, until it had been filled and forgotten and a house built upon the site. The 1902 discovery was on the opposite side, and reached a room several yards below the surface; so that before excavations on a systematic scale could be undertaken, and the real entrance located and cleared, a winding staircase had to be built.

The excavated and cleared portion of the astounding honeycomb of galleries and rooms covers an approximate area of fifty-four thousand square feet. The real entrance is on the summit of a hill, and the general trend of the Hypogeum from this spot is towards the north, west and south in the form of a fan. The ground under which it extends is known as Hal-Saflieni and lies just beyond the jurisdiction of the village, Casa Paula, and it is by either of these two names that the monument is known. The size of the rooms varies considerably, the largest, known as the Hall, measuring twenty-one feet by fifteen feet, with a height of about nine feet; the smallest, merely a recess, is less than a yard in its side dimensions. The shape of these chambers varies as much as the size, from an irregular outline hewn *ad libitum* to that of a perfect semicircle. Noteworthy, also, is the

irregularity of the floors, for practically no two rooms are built on the same level. Sometimes steps hewn in the rock lead from one room to another; or again, there is a drop either with or without a monolithic step to break the fall. Two stories have been discovered, joined by a flight of stairs broadening as it descends, the first step being six feet, and the last, or eleventh, nine feet long. The height of each step varies also considerably, the average being about six inches.

The most noteworthy features in connection with the Hypogeum are the doors, ceilings, and the thickness of the walls, which in some places, between two adjoining rooms, has been cut down almost to a wafer. The ceilings of some of the rooms were painted red; in one case, the patches of colour still to be seen seem to indicate that the whole room was painted, but in the innermost, and at the same time the most perfected, part of the monument the paint has been applied with more art, in the form of dainty scroll-work interspersed with circular patches. The doors, however, awaken the greatest admiration. As will be seen by the photographs, most of the doors can boast of jambs and lintel, hewn out of the solid rock, a passage in the lower story enjoying even a double ornamentation of this kind. But the photograph showing the innermost room is the most remarkable, for in this chamber art has been achieved. The inner jambs and lintel have been added, either from purely ornamental motives, or else with a view to make the doorway smaller. The outer lintel has a decoration in the form of a rounded groove at the top and bottom, thus ridding it of its angular edges, whereas the door is flanked by two recesses or niches. Some attempt at beauty has been attained, moreover, in the semicircular ceiling. In another photograph a view is shown of a vaulted arch in the ceiling which terminates in a monolithic pilaster flanking a gallery; and in yet another illustration we have a door, above the lintel of which three slits of varying width have been cut through the wall—hardly for the sake of ventilation, because, if so, this feature would be more frequently met with in the Hypogeum. And, finally, in another room, the floor has been cut around a central orifice, which doubtless served as a receptacle for water in connection with some religious rite.

The question now arises: why was this Hypogeum cut out of the living rock? The answer of the archæologists is, that it served the purpose of a huge ossuary for the deposition of bones after they had been dried and scraped in the open air. Human bones, either perfect, in fragments, or else in mouldered dust, are the remains which have been found in the greatest

Photo by] [*R. Ellis.*

THE HYPOGEUM, MALTA.

This huge series of subterranean monolithic rooms was discovered by a workman in 1902. Some authorities date their formation to a period 3,000 years before the dawn of history.

number within the rooms. The supposition is that this ossuary was the common burial-ground for the inhabitants of the whole island. The theory that the bones were placed within the rooms in a dry state was suggested after a calculation had been made of the probable number of skeletons represented by the bones and deposits found in one of the rooms; this was found to be about two hundred, while in reality there could only have been room for twelve bodies in the recess. On the other hand, the lack of thorough ventilation, and of traces either of food or ashes, must necessarily lead to the conclusion that the Hypogeum was not a habitation. The discovery, moreover, of peculiar discs, spheres, and other strange utensils seems to indicate that they were of use in some religious ceremony. Among other objects found which give a clue to the customs of the builders may be mentioned the bones of fowl, dogs and pigs, pottery of an ornamental kind (not for household use), decorated with feather, scale and other motives, and painted red on black, with one plate ornamented with the picture of a spotted animal with horns and a long tail; and last, but not least, several small statues, one of which, in alabaster, is the figure of a nude, doubtless the oldest Venus in existence. Nothing of bronze, or even flint, was discovered in the Hypogeum, which is hewn in a white calcareous rock. How the workmen went about their work is not known; but from holes drilled into the rock in the unfinished part of the ossuary, it is supposed that the method of procedure consisted in drilling holes in the surface of a rock, and then widening them by means of flint chisels and stone hammers—some of the latter having been found in the Hypogeum. The excavations are by no means completed, nor have bone and cranium measurements taken place. Judging by the Venus found, however, the hair of the tribe was short and curly, and the people fat rather than wiry. These characteristics show that there is a great affinity between the builders of the ossuary and the later inhabitants of Malta, whose bronze statuettes have been found at Hagiar Kim. Hundreds of years must have separated the two peoples, for there can hardly be a doubt that the Hypogeum at Hal-Saflieni belongs to the Neolithic, and not to the Bronze, Age.

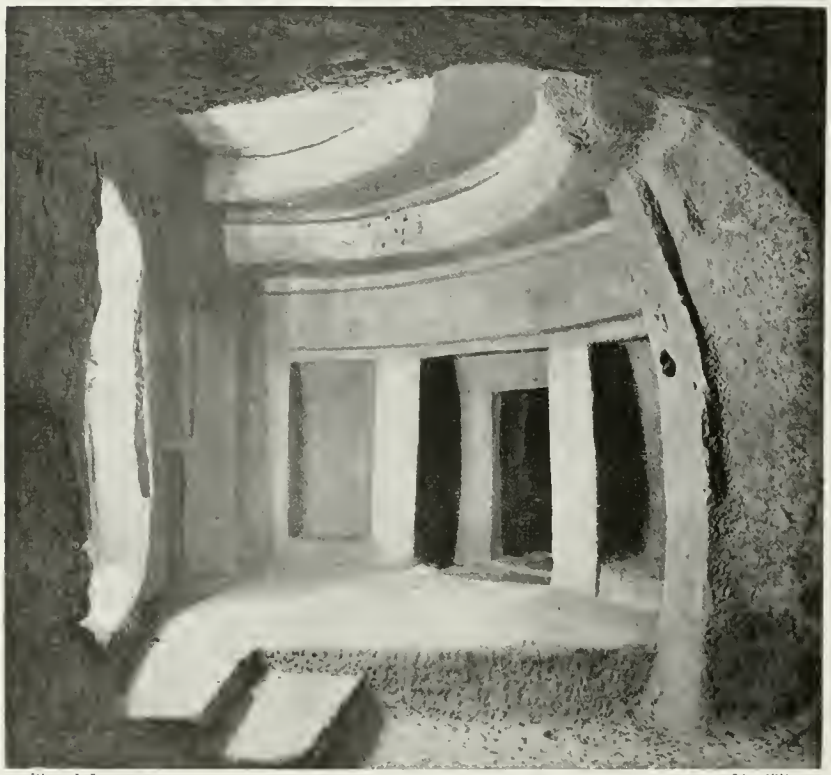


Photo by] [*R. Ellis.*

THE HYPOGEUM, MALTA.

The already excavated portion of the astounding honeycomb of galleries and rooms covers an approximate area of 600 square yards.

Gibraltar.—Even in the days when military science was in its infancy, the rock of Gibraltar, rising to a height of fourteen hundred feet sheer out of the waves of the Mediterranean, appealed to the imagination of the ancients, who called it, together with its companion Gebel Musa on the African coast, the Pillars of Hercules. But in all other respects they left the solitary giant alone to his

Photos by] [*R. Ellis.*

THE HYPOGEUM, MALTA.

Not only was this subterranean wonder-burrow excavated, but the ceilings of some of the rooms were decorated with a scroll-work in a red paint. The above illustrations afford the best examples of this decoration.

Photo by] [*R. Ellis.*

THE HYPOGEUM, MALTA.

Most of the doorways of the Hypogeum can boast of jambs and lintel which have been hewn out of the solid rock; but in the doorway depicted a second series of jambs and lintel has been added for decorative purposes.

meditations, and left it to the founders of a new empire, the Arabs, to be the first to recognize its strategic value. As Moors they crossed the Straits in 711, christened the Rock "Gebel-el-Tarik," or the Mountain of Tarik, their leader's name, constructed a castle, which is still standing overlooking the bay, and conquered the whole peninsula. Nine hundred years later the last Moor was exiled from Spain, and he left it where he had landed, in the Bay of Gibraltar. From that moment the future of the Peñón, as the Spaniards call our possession, was assured. It was fortified by Charles V., and on the decline of the Spanish Empire passed into our hands. Napoleon tried to wrench it from us when he was building his empire, and at no great distance Trafalgar was fought and won. In one respect, therefore, the Rock is unique; it is the key not only to Mediterranean supremacy, but also, and in a more general way, to the mastery of the sea. In the words of Thackeray, it is "the very image of an enormous lion, crouched between the Atlantic and the Mediterranean, and set there to guard the passage for its British mistress."

"Gib" is said to be impregnable, and it is to be hoped that we are not over-confident when we claim it as such. A German military authority was once asked his opinion. "It is hollow," was the laconic reply. There is certainly some truth in the statement, for since the Rock has been in our possession, we have, to a large extent, honeycombed it with galleries winding from the base upwards around the northern and eastern sides. From these galleries—of which only the lower is shown to visitors—platforms have been hewn in the living stone, and here portholes peep out across the Mediterranean, and across the narrow tongue of land, flat as a billiard-table, which connects the fortress with the mainland. The position of the modern guns and batteries is naturally one of the most jealously guarded secrets of our War Department, and only very few living men are acquainted with the formidable mysteries of Sugar Loaf Hill and Highest Point. From the town side on the west, where a grass-grown slope replaces the sheer plunge of the cliffs on the east, a straggling wire fence can be seen stretched along. It looks innocent enough, and so does

the hill above it, with its few inquisitive wild monkeys—the only ones in Europe—partridges and rabbits. Nevertheless, should necessity arise that hill-side can spit shot and shell in a manner unpleasant to the boldest enemy.

The Bay of Gibraltar, or of Algeciras, is a beautiful sheet of water, with the mountains of Spain as a background, but its only active, commercial spot is off the fortress town, winding in terraces between sea and rock, where the exclusive English inhabitants keep aloof from the Levantine contingent and from association with the white-hooded Moors who come over from Tangier. But though the town is interesting to those who have never seen an Oriental crowd, who consequently leave the eastbound steamer for an hour ashore, the real beauty of Gibraltar lies in its Alameda, or park—a bright green patch of luxuriant vegetation spreading from the busy streets southwards in the direction of Europa Point. Spaniards themselves are forced to admit that it is not surpassed in beauty on the peninsula—a compliment of which we have every reason to feel proud. For, on a barren rock, three miles long by half a mile across, we have not only created the premier fortress in the world and brought an important trade to the bay, but we have managed to rear a tropical garden on an unkindly soil, thereby giving one more proof of our national qualities as colonizers.

Italica.—Andalusia can lay claim to having been the land chosen by the Romans in which first to give an expression of their imperial policy of expansion by founding a city of purely Roman origin. After the destruction of Carthage, Scipio Africanus came to Bœtica—as Andalusia was then called—and, in immediate proximity of Seville, then already a city of importance and destined

Photo by] [*R. Ellis.*

THE HYPOGEUM, MALTA.

Archæologists consider that these series of excavations were intended to serve as an ossuary for the deposit of bones that had been dried and scraped in the open air.

Photo by] *[R. Ellis.*

THE HYPOGEUM, MALTA.

One of the most advanced excavations. Notice the vaulting of the chapel and the monolithic pilaster flanking the flight of steps.

to become the capital of the West Roman Empire, he laid the foundations of a new town which was to be a second Rome, a small republic of its own in the heart of a foreign country. Here the veterans of the African wars were to settle down and enjoy in peace and tranquillity the remaining years of their span of life, and, if the foundation of Italica be regarded in its true light, it was simply and solely for the benefit of these veterans that Scipio laid the first stone of a city which was to rise into power and wealth with the rapidity of a rocket, and fall as suddenly into the gloom of oblivion. In this respect Italica is almost unique in the history of the world. No sooner had the barbarian hordes of Goths and Vandals swept from the north across Spain to Africa, leaving the ruins of the old Roman Empire in their wake, than the city of Scipio Africanus passed from the memory of man, and its crumbling walls were used by Goths, Moors and Spaniards alike as a handy quarry for the stones required in building Seville and Cordova. But before this happened, Italica had grown to be one of the three chief cities of Andalusia, and had given birth to no fewer than three Roman Emperors, namely, Trajan, Hadrian and Theodosius.

Photo by] [*The Photochrom Co. Ltd.*

GIBRALTAR.

A general view of this "Pillar of Hercules" as it appears from the road to Spain.

The utter abandon of Italica to-day is its only charm. Passing through the famous suburb of Triana at Seville, the tourist travels eastward, following the course of the Guadalquivir. He reaches Santiponce, a village of no renown, but of many beggars. Boys and girls follow him, offering fragments of Roman friezes and cornices chopped off a fallen block of stone, or else coins which have been polished beyond recognition. The river used to flow here, past Italica, but when it diverged from its course the doom of the Roman city was sealed. A few hundred yards away, among olive-trees that bask silver-white in the glorious sunshine, lie the ruins of the city. Ruins? Vestiges of ruins; in the words of Ford, "the blackened bones of half-buried giants." And since he wrote those words, the bones even have succumbed to the vandalism of Andalusian beggars, to the negligence of a careless government, and to the requirements of gipsy tribes, who use the vaults running under the amphitheatre as a temporary shelter during their nomadic wanderings. On the seats of the self-same amphitheatre, lizards, regarded by the superstitious Andalusian as charms against the Evil Eye, warm their scaly backs in the sunshine, and on the approach of an impertinent intruder, disappear rapidly into a crevice. Such is Italica to-day. The Museum at Seville contains some fragments of statuary found here, foremost among them being a head of Minerva and a small

Venus. Mosaic floors, such as Pompeii has to offer us by the dozen, were likewise discovered, and carefully drawn by enthusiastic *savants*, but since then they have miraculously disappeared like so many of Spain's monuments.

The Sierra of Malaga.—The romantic corners of Spain, where wild nature in gorges, canyons and caves defies the approach of man, are as numerous as peaks in the Alps, and one among these many picturesque spots is the Malaga Gorge, on the line from Cordova to the sea-port town. Those who are acquainted with the history of the downfall of Granada, one of the most pathetic defeats chronicled throughout the ages, will remember the rash folly of the Conde de Ureña and the heroic obstinacy of Don Alphonso de Aguilar, both of whose campaigns ended disastrously for the Castilian arms in the Serrania of Malaga. They will also remember the exploits of that hardy Moorish warrior, el Zagála, who, from his alcazar in Malaga, conducted in person his expeditions into the enemy's country, now eastward towards the Alpujarra, northwards in the direction of Cordova, or westwards past Ronda into the Campo of Gibraltar. Those were the good old fighting days when

Photo by] [*The Photochrom Co. Ltd.*

THE RUINS OF THE AMPHITHEATRE, ITALICA, SEVILLE.

Built and at first organized by Scipio Africanus, Italica rose to power and sank to oblivion with the swiftness and brightness of a meteor.

the hard-pnshed Moors made a last stand for the independence of their kingdom of Granada, and it was in the passes or Puertos of the Malaga mountains, a chain of savage peaks, broken into rock- and tree-strewn vales and deep gorges, where the rivers, beaten into froth as white as milk, dash headlong southwards, that the last valiant skirmishes between Christian and Moslem took place. Legends and romances, the former bristling with bravery and courage, the latter aromatic with southern passion, have clothed this untamed district with poems that have hardly a rival in literature. Other mountainous regions may be grander and more majestic, and able to boast of awe-inspiring wonders,* of rugged, chaotic beauty and poems, across which is wafted the perfume of orange-blossoms. Those who know their Washington Irving—wizard of the pen, even if fantastic dreamer—and travel by rail south across the Sierra from Bobadilla, that most horrid of uninteresting junctions, will feel the influence of the region creep over them as the train crawls along steep declivities, passes over the roaring river Guadalhorce hundreds of feet below the arched bridge, cuts its way by means of a tunnel through a mountain, and finally leaves these picturesque glens and virgin gorges for the fields of Malaga, planted with sugar-cane and vines shadowed by orange-trees. The change from the chaos of Nature's combats among rocks and crags, to the smiling orchards of the coast, with glimpses of the blue Mediterranean glistening in the far-off, bursts suddenly

* But truth and fiction have combined together so completely to make the Sierra of Malaga famous, that all Spain's poetic beauty is centred and lingers in the chaotic splendour of this rugged mountain range.

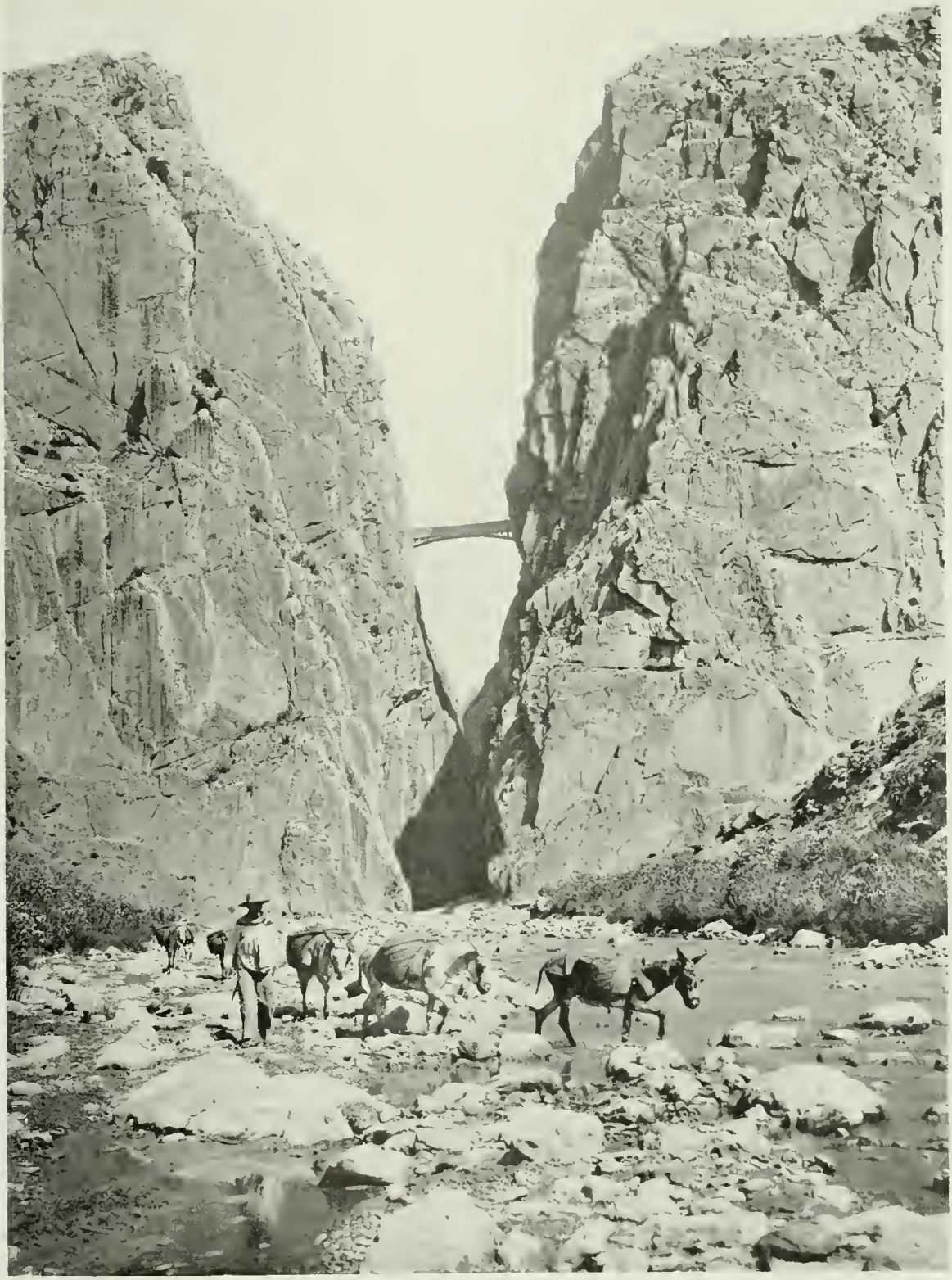


Photo by] *[The Photochrom Co. Ltd.*

THE GORGE OF THE GUADALHORCE, MALAGA.

Natural grandeur and the romance of history have made the Sierra of Malaga famous. Here the Guadalhorce makes its way between steep cliffs many hundreds of feet in height to the rich fields of Malaga.

From Stereo copyright by] *[Underwood & Underwood.*

TAORMINA, SICILY.

About forty miles distant from Messina lies the Greek theatre of Taormina, which was practically rebuilt by the Romans. This illustration shows the front view of the Roman stage with Mount Etna in the distance.

upon the traveller, and he can understand the fascination which beautiful and varied Andalusia must have had for her Moslem conquerors.

The sierra which surrounds Malaga in the shape of a gigantic amphitheatre enters the province of Granada on the east, and only by certain passes can those of one city communicate with those of the other. The coming of the railway has opened up the northern district, and hardy climbers are beginning to explore peak and canyon. Several caves have been found, some of them indicating the presence of prehistoric man, others covered with beautiful hanging stalactites. In the west, where the mountains change their name into the Sierra de Ronda, the grandest snatches of landscape are to be obtained, especially in the immediate neighbourhood of Ronda, where the Tajo seethes and boils at the foot of a high and perpendicular cliff, and eats its way seawards through the living rock.

The Greek Theatre at Taormina.—A priceless jewel in a wonderful setting must have been the small theatre at Taormina in Sicily, distant about forty miles from Messina. To-day, as shown in the accompanying photograph, the jewel is a ruin, but the wonderful setting remains. In the early morning, especially in winter, when the run rises out of the sea, the distant snows of Mount Etna are bathed in a rosy hue, and nearer, the crests of the hills and the summits of rocks and walls take on that ripe golden glow peculiar to the Mediterranean, whilst shadows, almost violet in their intensity, stretch forth their tentacles toward the west. What a surrounding for a theatre, for the staging of a weird play *à la* Maeterlinck, or of a Greek tragedy approaching its climax in the gloaming, when Mount Etna is a faint silhouette, and the nearer hills from Mola to Monte Venere loom lugubriously in the middle ground, between the actor and the indefinite far-away! A stretch of the imagination and the whole scene can be pictured by the mind's eye: the huddled spectators seated in white togas on their stone-hewn seats in the amphitheatre. In front of them the orchestra, and then the stage where actors rehearsed the passions which are both noble and ignoble—the whole surrounded by a colonnade of white marble, about which the first evening stars twinkled in a cloudless sky.

Though originally built by the Sicilian Greeks in the days of Dionysius the Elder, who ruled at Syracuse, the theatre at Taormina was practically rebuilt by the Romans. The amphitheatre,

which has a diameter of three hundred and seventy-five feet, is hewn in the rock, excepting for a few additions which are Roman. A vaulted gallery of forty-five columns surrounded the whole building. The orchestra amphitheatre, which is in perfect condition, has a diameter of one hundred and fifteen feet. In our photograph a front view of the Roman stage is shown, with Mount Etna in the distance. The wall, running from left to right, should be continuous, forming the rear of the building, which had originally two stories, as can be seen by the solitary ruin of a wall on the right. The square-shaped wing on the same side of the illustration was used for the dressing-rooms and for storing stage decorations; it corresponded with another on the left of the spectator. The stage entrance on the right is to be seen beside the last column; of these columns six only are standing, having been placed there within recent years by the authorities, who are doing their utmost to restore as much of the building as is possible. Its almost total destruction has been generally attributed to the Arabs, but it now transpires that the chief delinquent was one Duke of San Stefano, who used columns, capitals, and statues for ornamenting his own palace. Efforts are now being made to collect as many fragments as possible, and in the small museum above the ruins are to be seen some Græco-Roman remains of interest, if not of beauty. Exception must be made in the case of a fine head of Apollo, which belonged to a statue placed within the theatre. As the bare walls still show many recesses and niches, statuary must at one time have been the leading decorative motive in the most beautifully situated open-air theatre in the world.

Cordova Cathedral.—"Cordova shall be a second Mecca," said Abderrahmen, the founder of the Western Caliphat. He was of the family of the Omayyads and had escaped in the most miraculous way the massacre of his kith and kin at Damascus. He had come to Cordova, and within a few years he made himself the master of the city, and was the first of the Caliphs of the Omayyads. That was in the eighth century. Two hundred years later, before the Norman Conquest, Cordova

Photo by] [*The Photochrom Co. Ltd.*

CORDOVA CATHEDRAL.

This mosque is the largest Moslem cathedral in the world, and is a magnificent specimen of the religious architecture of these people.

was the mightiest city in Spain, one of the wealthiest in Europe, a seat of learning and culture, and in possession of the largest mosque or Moslem cathedral in the world. Another two hundred years, and the banner of Castile waved over the castle and the Cross supplanted the Crescent in the mosque, commonly known as the "mezquita." Since then the decline of the city has been rapid, and to-day it vegetates in the shadow of the most marvellous monuments of religious Moslem architecture in existence. Fate has willed it that it should be converted into a cathedral, but the mind prefers to see it as it stood then, when Cordova had its million inhabitants (if we are to believe the Arab chroniclers) and marble baths were a pleasaunce for rich and poor alike. In the centre of the city stood the gigantic mosque, with the muezzin calling to prayers from a minaret no longer existing. Stern and grim walls formed a mighty, fortress-like, rectangular enclosure five hundred and seventy feet long by four hundred and twenty-five feet wide, in size almost equalling the area of St. Peter's in Rome.

Photo by [*The Photochrom Co. Ltd.*

A DOORWAY IN THE CATHEDRAL, CORDOVA.

This beautiful decorated arch of one of the shrines in the "mezquita" is the most perfect example of the Byzantine mosaic-worker's art in transparent mosaic.

Once inside the wall, how changed was the vista! The Court of Orange-Trees, surrounded by an arcade where shadow could be sought, covered one-third of the area of the mosque, and was planted with orange-trees in eighteen rows, forming nineteen leafy aisles, each terminated by a door leading into the mosque. Fountains of cool water for the purpose of ablution flashed in the sunshine. But the impression of an endless orchard of green aisles was enhanced by the peculiar architecture of the mosque. Looking down one of the alleys of the Court of Orange-Trees, and through the open door of the mezquita, the alley seemed to be prolonged indefinitely. Instead of living trees, shafts arose in the subdued light of the mezquita, and were crowned with horse-shoe arches in red and gold. Burning lamps hung in festoons, like so many oranges, by which arrangement an unrivalled impression of a limitless stretch of verdure was obtained. Unfortunately the degeneration of the *leitmotiv* has been complete. The doors leading into the building have been blinded, and a choir has been erected in the very centre of the edifice, thus taking away three hundred and fifty of the shafts and leaving about eight hundred and fifty to complete the labyrinth of aisles, of which nineteen are longitudinal and twenty-nine transversal. One of these aisles, leading from the Court of the Oranges through the building to its extreme end, was the principal nave, and, originally, before the Caliph Al-Mansur's additions in the tenth century, ran through the centre of the edifice. At its further end stood the holy of holies, the *mihrab*, or prayer-shrine facing Mecca,

where the Caliph of the day had his prayer-stool. This small recess is still standing to-day, and is beyond a doubt one of the marvels of the Old World, to see which thousands of people travel to Cordova. They may pass without a murmur under the double, superimposed arches resting on capitals of an unending variety of design, but when they reach the *mihrab* and the guide holds up a lighted candle (which, by the way, leaves a streak of soot behind it) to show the shining, shimmering, transparent mosaic which lines the entire wall, an ejaculation must perforce fall from their lips. For nowhere else is such a perfect exhibition of the Byzantine mosaic-worker's art to be found. Unfortunately for the peninsula, however, this iridescent shell of minute atoms was not of indigenous workmanship, for it was sent as a gift by the Emperor of Constantinople to the most powerful potentate of the West, the Caliph of Cordova.

Those were the palmy days, the days that are remembered by Moors in Morocco and Arabs in Arabia with justifiable pride. Speak to an educated Moslem in one of the cafés at Cairo about Spain, and his eyes will light with pleasure and his lips will murmur softly: "Kurduva." The Alhambra is of second importance to him, and a mention of the Giralda at Seville will hardly bring a smile to his face. But Cordova—ah, that is another matter! The Omayyads, a pure Arab family uncontaminated by the Atlas blood of the Berbers, ruled in the favoured city on the Guadalquivir, and the Omayyads were a great and glorious family, born to be rulers if ever a family was born to be such. Whereas the rest of Spain, long before the dawn of those cultured centres, Salamanca and Alcala, was grovelling in a semi-state of savagery, in Cordova was created the most powerful centre of Islam in the world. Mecca was the Holy City, but Cordova was the power politic and the seat of learning. To the Omayyads, the first of whom fled a beggared exile from Arabia, was due this marvellous rise of what had hitherto been an insignificant satellite of Seville, and they were the creators of its wealth and of its importance as a seat of learning. Generally we are of the opinion that the Arabs in Andalusia were an intolerant, fanatic horde, for ever waving aloft the Crescent and unsheathing the sword in the fray against Christians. This belief is erroneous. Cordova was essentially a centre of the arts and sciences, and students came from distant lands to study at the feet of Arab scholars, Andalusian Jews

Photo by] [*The Photochrom Co. Ltd.*

CORDOVA CATHEDRAL.
The second prayer-shrine or Mihrab.

and Muzarabes, or Christians living under Arab dominion. Averrhoes, the Andalusian Arab who was the first to introduce the study of the Greek classics into Europe, taught at Cordova, and created a school of philosophy from which was to be born at a later date the Renaissance of learning. Unfortunately the birth was not to take place in Spain, for by the time Europe was ripe for the humanists, Cordova's star had paled, and Bologna in Italy, the Sorbonne in Paris, and, in a minor degree, Salamanca in Castile, had wrested from Islam those teachings which Islam had been the first to promulgate. And, if any further proof be needed of the tolerance of the Arabs in Andalusia, be it remembered that, side by side with the Oriental civilization of Cordova, there flourished a strong Jewish movement that has left its mark, not only in the history of that race, but in the literature and arts of Spain as well. For many of these Cordovese Jews wrote their poems in the Spanish language. The Christians came: the Jews were banished, and they dispersed

Photo by] *[The Photochrom Co. Ltd.*

TORGHATTEN, NORWAY.

The famous tunnelled rock of the Norwegian fjords, which derives its name from its resemblance to the head-dress of the peasants.

to the four corners of the globe. Many of them settled in England, as did a large number of those expelled at a later date from Portugal, but the majority migrated to Salonica, then and now under the Crescent of Turkey, and there they continued living their Spanish life, and do so to this day. As a matter of fact, the Spanish Jew is a factor in the Levant, and it is strange, in a street somewhere in the Near East, to come across one of the race speaking Spanish of the fourteenth century, and able to quote from the rabbis of Cordova and the poets of Andalusia.

To-day there is hardly a glimmer of the great city to be found in the dusty, lazy, sun-baked town on the thirsting Guadalquivir. The Mezquita is there, as are old houses and smiling *patios*, or courtyards, filled with flowers, carnations and spikenards, among which flashes the scarlet skirt of a happy girl, or a glimpse is caught of a Christian face that has more of the oriental than of the west, and reminds us of some Eastern beauty whom we met wearing a muslin veil so thin as to betray her features. Otherwise the city has nothing to offer us. Its bull-ring is as are those of Seville and Valencia; its principal square is lined with shops and cafés, where dominoes are continually played, the only variation being the rolling of cigarettes between tobacco-stained fingers. But across the

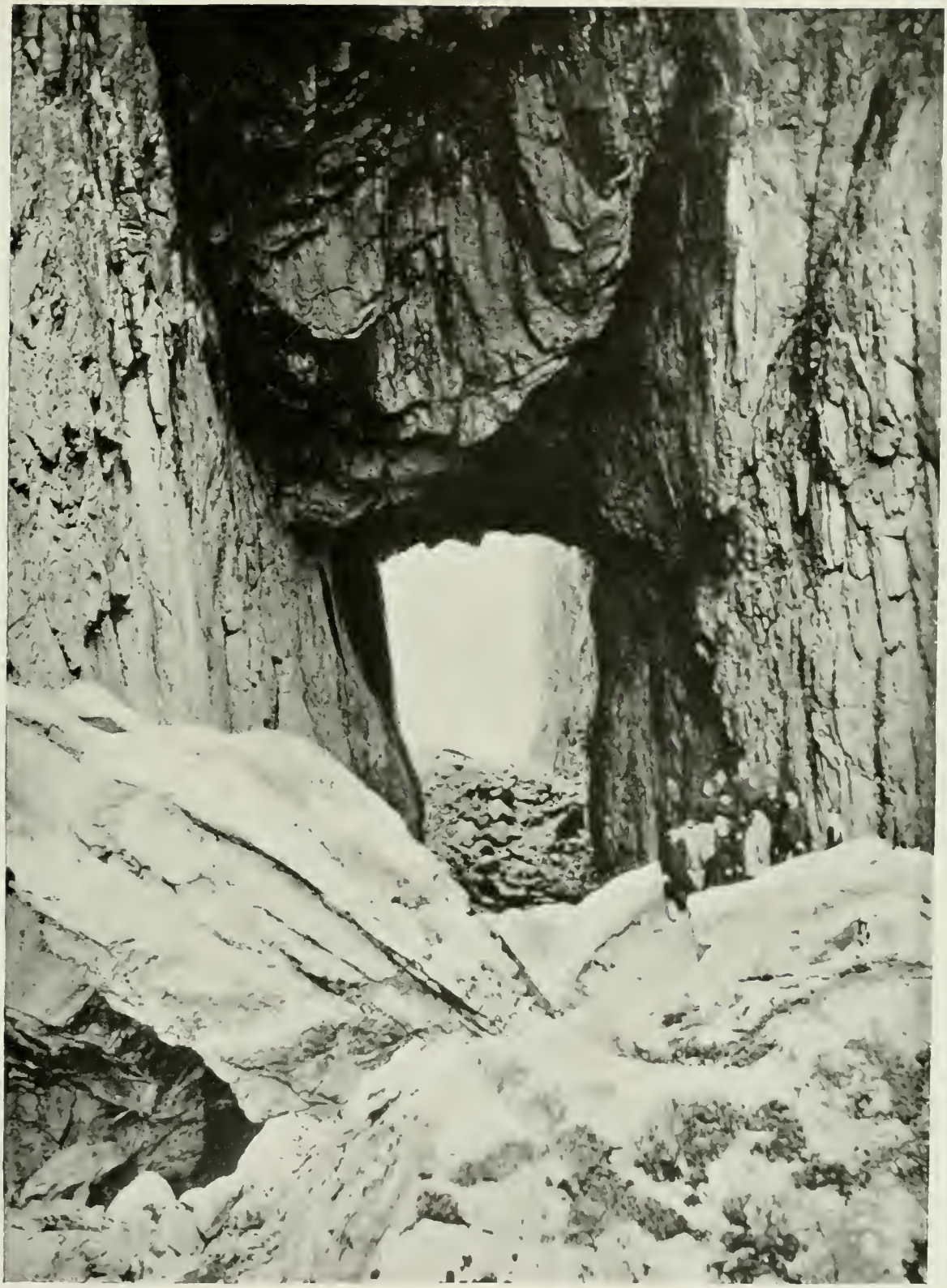


Photo by] [*E. G. Wood.*

TORGHATTEN, NORWAY.

This wonderful bore, made by the inrush of melting glaciers, which at length met together in fierce impact and so acted as a drill upon the rock, is so finely bored that it has the appearance of a tunnel worked by a machine chisel.

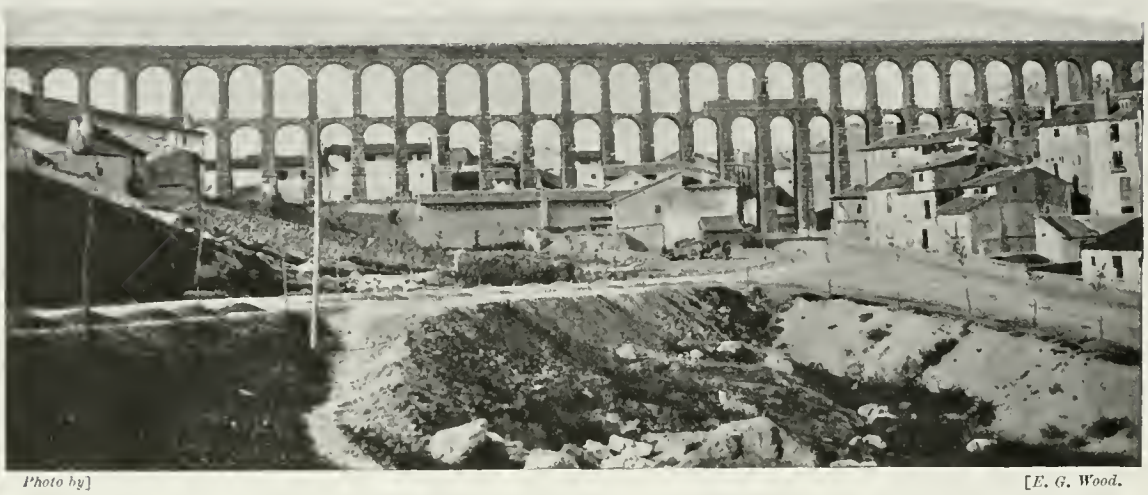


Photo by] [*E. G. Wood.*

THE ROMAN AQUEDUCT, SEGOVIA.

Few of the Roman remains found in the Iberian Peninsula can compare in colossal proportions and imposing grandeur with this aqueduct of the reign of Trajan.

river, in the Sierra of Cordova, friars and monks look down on the City of the Fallen and doubtless praise the day when the Crescent waned and with it the life of the second Mecca. They are anchorites, the monks who live in rude and lonely cells, in the peaceful hills among palms and prickly pears. They and their haunts remind us of days that have gone in the same way that Cordova reminds us, for they are anachronisms—sombre figures in brown stepping out of one of Zurbaran's exquisite pictures, and their faces have that same expression of piety mixed with severity that has given the Catholic Church men like Ximenez and women like St. Theresa.

Torghatten.—Like huge serpents of clear sea-water, the fjords of Norway wriggle miles inward into the land, and offer to the eye some of the most picturesque landscapes in the world. At times the channel narrows between sheer cliffs to the width of a tourist steamer, and then it suddenly broadens out into an inland lake bordered with meadows and deep green pine forests. Farther north glaciers and snowfields come down almost to the water's edge, and nature is barren excepting where a few hardy plants struggle for a bare existence. According to geologists, these intricate fjords were formed by the movement of ice in the Glacial period. One mass of ice spread from Russia across the Baltic and Sweden to the valleys of Norway; the other pushed eastward from the Atlantic, and it was in these fjords, then high-lain valleys, that the two frozen waves fought against each other, wearing away soil and strand until, when the ice melted, the valleys had disappeared and fjords had taken their place. But gigantic rocks and peaks which had resisted the friction of the glaciers remained, either on the edge of the fjord, or as islands off the coast. There are at least one hundred and fifty thousand of these islands, some of them over three thousand feet in height, and their grotesque shapes are not the least attractive feature in the weird panorama of broken sea and land. The most famous is the Torghatten, about five miles to the north of the Bindalsfjord, in Nordland. Its shape, as indicated by its name, is that of a Norvegian market-hat floating on the water, and attaining a height of over eight hundred feet. What gives it its unique character, however, is a natural tunnel bored through it during the Glacial period. As this tunnel is four hundred feet above the level of the sea, some idea can be formed of the extent to which the soil was worn away. In reality this strange hole is a perpendicular giant's cauldron in which stone, ice and water churned and swirled until they had perforated the rock in their frantic Arctic

struggle, and gained an outlet for the impatient masses behind. So perfectly did they carve the tunnel that in parts it almost looks as though it had been chiselled by the hand of man. On the eastern side it is only sixty-four feet high, increasing to two hundred and fifty on the western. Its length is over five hundred feet, the walls are almost perpendicular, and the floor covered with the débris of ages and with remains of the last struggle, just before wave and ice retreated. Gazing through it from the western extremity, the spectator is rewarded with a peculiarly framed panorama of blue water, rugged coast and jagged islands, with perhaps a quaint Norvegian fishing-smack pursuing its way silently southwards.

Roman Aqueduct at Segovia, Spain.—Among the many Roman remains which dot the Iberian Peninsula few can compare, as regards colossal proportions, beauty and perfection, with the gigantic aqueduct, subject of our photograph. It probably dates from the first century after the birth of Christ, or, to be more precise, from the reign of the Spanish-Roman Emperor Trajan, who bestowed architectural splendours on his native land with a lavish hand. On Spain's return to a state of semi-barbarism following on the Gothic invasion and the destruction of the Roman Empire, the gigantic aqueduct was partly ruined, and before a hundred years had passed, the ignorant populace were wondering how or why those huge arches spanning the valley had ever been erected, and, unable to find a satisfactory answer, promptly attributed its construction to Satan, and called it the "Bridge of the Devil"—a name by which it is popularly known to this day. In part reconstructed and wholly repaired, this, one of the finest of the many Roman aqueducts to be found scattered throughout the Old World, carries the water of Riofrio from a distance of ten miles to the city which was at one time capital of the Castiles. In Trajan's days it was a mere pleasure resort during the summer months, the mountains and forests surrounding it being filled with every species of wild animal which offered the huntsman exceptional sport. The change has not been so great since those days: Segovia is no longer the pleasaunce of kings, but La Granja, only a few miles away, in the Sierra, is King Alfonso's favourite spring and autumn residence, while at Riofrio he possesses a fine shooting lodge.

The aqueduct, as stated, is in perfect condition. It is built of big blocks of a hard stone resembling granite, naturally dark white, but turning to deep grey when exposed to the air for any length of time. Neither rivets nor mortar have been used in the construction—a peculiarity which enhances the merit of the arches. Of these there are two tiers, the second, and, smaller, one being superimposed on the lower, the result being a monument of picturesque gracefulness. The

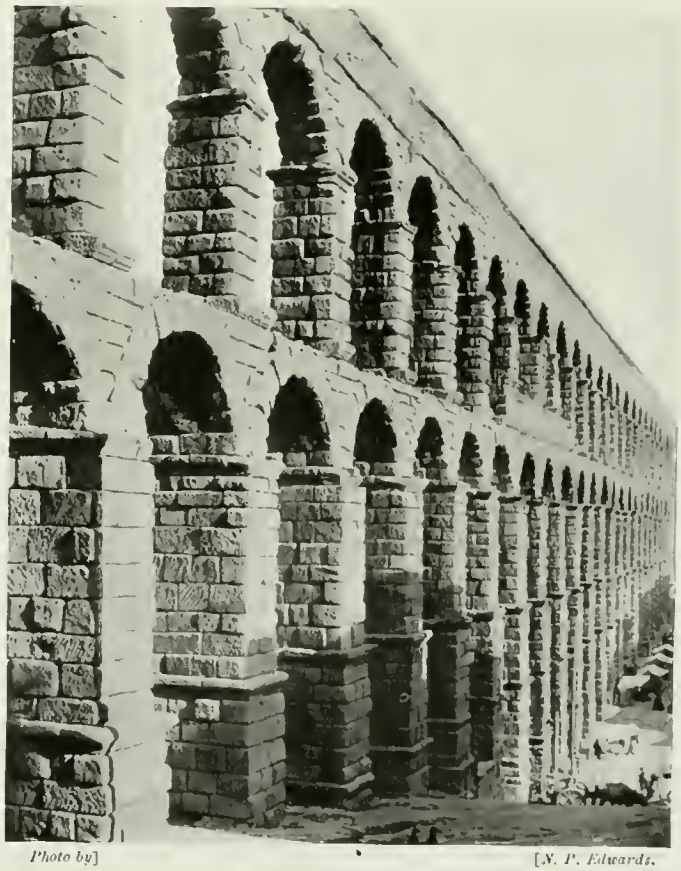


Photo by] [*N. P. Edwards.*

THE ROMAN AQUEDUCT, SEGOVIA.

When the circumstance of its building had been obliterated from the memory of the populace, this aqueduct was universally ascribed to the agency of the Devil, and it is still known as "The Devil's Bridge."

part of the stone waterway spanning the valley is eight hundred and forty-seven yards long, and the greatest height attained is one hundred and thirty-two feet. There are a hundred and nine arches, and half-way across the valley, between the upper and lower tiers, a cornice nine feet long used to bear a Roman inscription, which has, however, been effaced.

Earth-Pillars in the Alps.—There is nothing either strange or inexplicable about the formation of earth-pillars, or pyramids, as they are indifferently called. Granite rocks falling from some cliff on a clay soil, preferably moraine, become embedded when rain softens the surface of their new resting-place. Successive storms wash away the clay surrounding the base of the rocks, leaving a cone-shaped stalk of dry soil on which they repose. This stalk grows in height as the clay around it is carried away by successive downpours, and, as long as it has Nature's "umbrella" to keep it dry, there is little fear of it breaking. The rain beats down on its sides to within a foot of the summit, and gradually it becomes more and more slender, ever changing its outward appearance as new channels and grooves are gnawed in its flanks by the running streams of rain-water. Finally, the day arrives when the granite "cap" loses its balance, breaks the slender stem and topples over into a ravine. From that moment the pillar is doomed, for without the volcanic top to protect it against the inclemency of the clouds it speedily withers away.

Photo by] [*G. R. Ballance.*

THE EARTH PYRAMIDS OF ENSEIGNE.

In the Val d'Hérens of Valais these remarkable structures are to be found. They are earth ridges protected from demolition by their curious stone caps, probably placed thus by a moraine.

The Alps contain many of these earth-pillars in the making. They are to be met with, perhaps a foot or a half in height, in nearly every glacial moraine. Their eventual size in ages to come will depend upon the depth of the clay soil, as also upon the stability of the granite cap. Owing, however, to the shallowness of the clay bed, these Alpine pillars will never rival in size their American cousins in the gigantic canyons of the West. In all other respects they will, however, be similar, and the Alps contain to-day many finished specimens of these geological phenomena, the most noted being those which stand in Switzerland, in the Canton of Valais. Others are in Botzen, Tyrol, while Savoy can boast of its *pyramides des fées* at Saint-Gervais. Our illustrations show the earth-pillars in the Val d'Hérens (Valais), remarkable specially in one particular, namely, in the way they form a battlemented and turreted wall through which a tunnel has had to be hewn in order to give passage to the road leading from Vex in the Rhone valley to Arolla at the foot

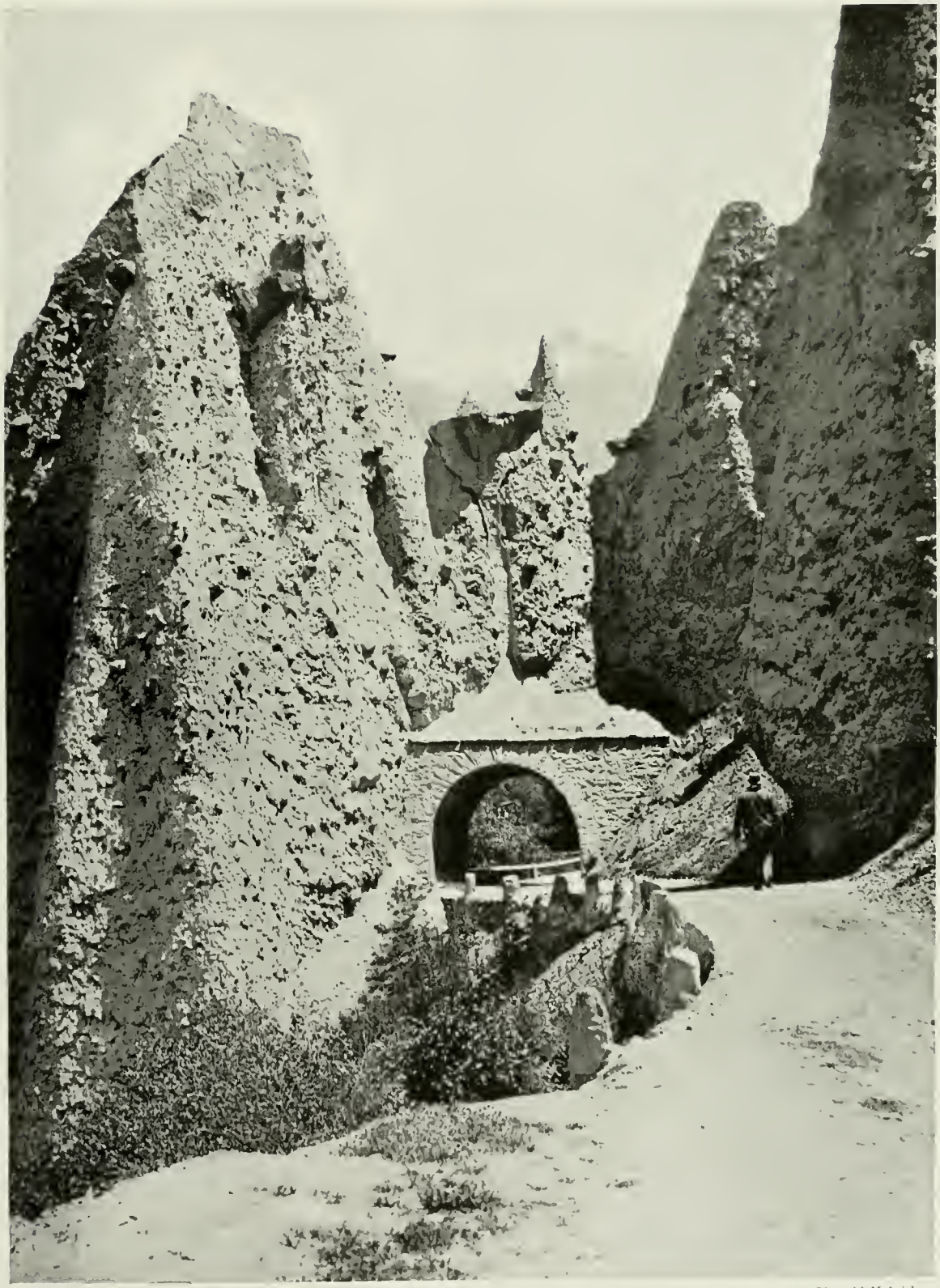
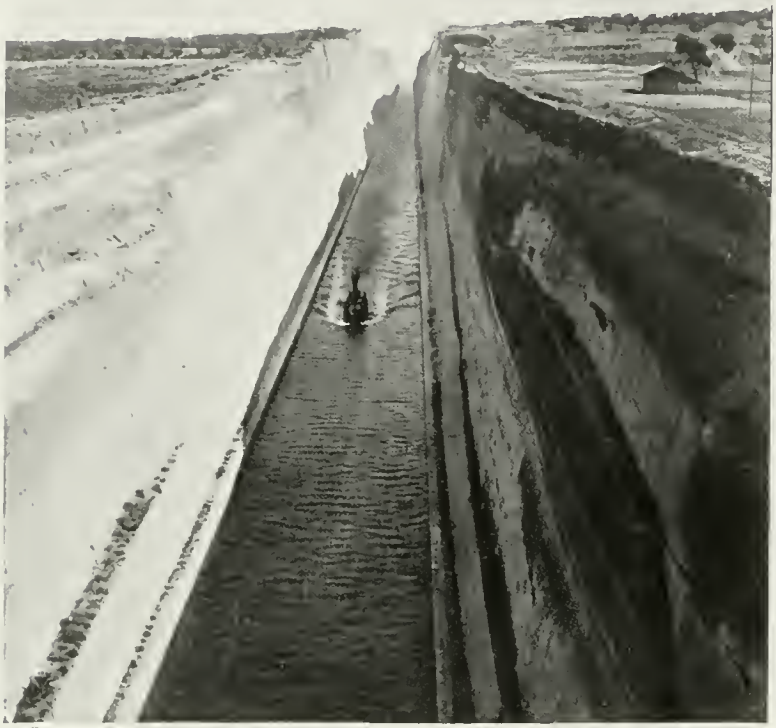


Photo by] [*Donald McLeish.*

THE EARTH PYRAMIDS OF ENSEIGNE.

A view of the Earth Pyramids showing the tunnel constructed through their battlemented walls in order to make a passage for the road leading from Vex to Arolla.



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THE ISTHMUS OF CORINTH.

The Romans were the first people to suggest and commence the making of the canal, a work which was not completed till 1893, and even now much labour has still to be expended before it will be completely navigable.

of its glacier. Unfortunately, the majority of these pyramids, having lost their granite caps, are inevitably doomed, diminishing visibly year by year. At last the tunnel with its walls of solid rock will stand alone, indicating where the pillars once reared their proud heads on the slopes of a mountain, the Pic d'Arzinal behind and the Hérens river hundreds of feet below them, whilst opposite, they looked upon the fields, orchards and cottages of the Swiss peasantry dotting a hillside topped by the distant Becs de Bosson.

Isthmus of Corinth.—The Romans were the first to attempt the construction of a canal across the four-mile wide Isthmus of Corinth, thereby bringing Peireus (or Athens) two hundred miles nearer the Adriatic, and doing away with the slide, or glissoir, for ships used by the Greeks. The scheme was never carried out, however, until, in 1881, a company was formed for this purpose, and completed its mission twelve years later. Owing to the insignificant width and depth of the canal, seventy feet by twenty-six, and to its dangerous currents, the artificial waterway is generally used by native craft only, and a new company has now been formed to widen and deepen the canal, and to erect breakwaters at each extremity. One mile from the eastern end a railroad bridge used by the Athens-Corinth line spans the canal, and many ferry-boats cross it at various points. Running parallel with it, but at some distance to the south, are the remains of the old, fortified Isthmian wall, and, a quarter of a mile to the south of the eastern extremity, lie the few ruins of the Precinct of Poseidon, with traces of a temple to the Sea-God, and of the stadium where the Isthmian games, second only to the Olympian, were held every two years by the Athenians.

The Giralda.—"Who has not seen Seville, has never seen a marvel," runs a Spanish proverb, and of the many marvels possessed by the Queen City of Andalusia, none is more perfect than the Moorish tower which serves as steeple to the Gothic cathedral. When Seville was under Moorish sway, a mosque stood where the ogival pile now stands, and the muezzin called the Faithful to prayer from the two-hundred-and-fifty-foot-high minaret. But when the mosque was torn down in order that the Spanish Church might build a cathedral "second to none, either in size or grandeur," a superstructure was added to the campanile, and this was surmounted by a vane, whence the name of the whole edifice from the Spanish *girar*, to turn. The total height, with the second body, and the vane in the form of a gilded statue of Faith, is three hundred and sixty-four feet.

By the Photochrom Co., Ltd.

VENICE.

The most famous spot in Venice, The Piazza of St. Mark, is the evening rendezvous for all grades of Venetian life. In the background is the Cathedral of St. Mark, and to the right Les Doges Palace, while the famous Campanile, or Bell Tower, dominates the scene.

A close examination of the proportions and decorations of the Giralda, by many considered to be the most beautiful tower in the world, cannot but fail to command the admiration of the most casual visitor. It dates from the end of the twelfth century and belongs to what is popularly known as the second period of Hispano-Moorish art, the first attaining its supremacy in Toledo and Cordova, and the third in the Alhambra. The base of the tower is a square, each side measuring fifty feet; the thickness of the walls at the base is nine feet, and increases gradually as the structure rises. In the centre of the tower a solid shaft or axle reaches from the base to the summit, thus adding to the stability, and around it a broad ramp climbs spirally to the upper platform. Thus stairs are avoided, and it would be possible to ride up the tower on horseback. On the other hand, the result has been to place the windows at different altitudes in each of the four sides, but this obvious inconsistency has been disguised by the wealth of ever-changing ornamentation on the exterior surface. This begins as soon as brick is used as the constructive element (the foundations to a height of about forty feet being in stone), and takes the shape of geometrical designs *in basso*, called by the Arabs *ajaracas*. These designs are among the most wonderful that the Moors have left us in Spain, being a most studied blending of the curved with the straight line, in the form of ever-changing and varying motives. The windows are subject to the same rich fantasy of its creators: here they are in the likeness of those delicate *ajimeces* for which the Alhambra is noted, there they are crowned by the characteristic horseshoe arch, whereas anon they remind us of the ogival arches of the Gothic school. According to tradition, the original minaret was crowned by an octagonal body, across the top of which was stretched a gigantic cross-bar carrying four golden balls which shone in the sunshine like lamps, and were to be seen from as far as the eye could reach. Its place has, however, been taken by a new addition, dating from the sixteenth century, and built in imitation of one of those biscuit-like silver Custodias so frequently to be found in Spanish cathedrals. Happily, the superstructure harmonizes with the rest of the tower, that is, if exception be made to the vane, which would be more appropriate on the Sacré Cœur at Montmartre than in its present position.

Photo by] [*The Photochrom Co. Ltd.*

THE GIRALDA, SEVILLE.

This Moorish tower serves as a steeple to the Gothic Cathedral of Seville. It is surmounted with a vane which has given it the name Giralda, and is the finest specimen of the second period of Hispano-Moorish art.

CHAPTER XXII.

By CHARLES WHITE.

Athens.—Athens stands pre-eminent among the mighty cities of the world; not for its size, for it would form only an unimportant division in some of the mighty townships of to-day; not for its situation, for in this, again, it is little able to compete with the great modern harbours which, through their commanding positions, draw the commerce of the world to them. Rather its fame rests upon its ancient glory, for here was the birthplace of the civilization which reigns supreme throughout the world to-day. Here culture was nursed, was trained, passed through its magnificent adolescence, and from here it sent forth vigorous shoots which took root and sprung up in every corner of the globe, bequeathing to us for our wonderment the relics of that culture's splendid triumph. So it is that to-day the pilgrim must travel far, indeed, before he can find objects more worthy of his veneration or more sublime in their majestic ruin than this ancient city can show. As soon as Athens is reached, the eye immediately seeks out her crowning glory, the Acropolis; nor does it long wander in uncertainty, for the splendid escarpment of blue-grey limestone rising precipitously over two hundred feet above the Attic plain is a landmark that cannot be overlooked, and to it we instinctively make our way. It is indeed right that we should, for the whole life of Athens is represented in the Acropolis. This was the citadel that in times of stress became the refuge of the inhabitants of the town which sprung up at the foot of the rock. On this spot the ancient kings of Athens set up, or were deprived of, their power, and later, from this sacred fortress a successful stand was made against the advancing Persians. It is impossible to mistake the evidences of the struggle that took place here at a time so remote that history and myth, inseparably intermingled, fill up the pages of the "ancient tale." But we can, if we will, draw our own conclusions from what is before us. The finest remains of the earliest great walls are on the north and the south-east of the Acropolis, although a mighty fragment can be seen beneath the bastion of Nike Apteros. These walls are formed of immense blocks of stone piled one on the top of another and then fitted together by the insertion of small pieces to act as wedges, and contemporary with them are the rock-hewn stairways situated to the north,

Photo by permission of [*Colonel Mitford.*

THE WALLS OF THE ACROPOLIS, ATHENS.

Five periods of construction can be identified in this view of the famous walls—the Cyclopean wall, the wall of Cimon, the wall of Themistocles, then Frankish building, and finally Turkish.

Photo by] *[The Photochrom Co. Ltd.*

THE ACROPOLIS, ATHENS.

A famous view of this ancient citadel. In the foreground is seen the remains of the temple of Olympian Zeus and on the summit of the wall-girt rock the marble colonnade of the renowned Parthenon.

Photo by] [*L. Meinertzhagen.*

THE PARTHENON, ATHENS.

The ruins of this Temple, erected to the honour of Athena Promache, stand desolate amongst the débris of what was once the glory of Athens. Yet the situation adds a touch of tragic splendour to this most perfect monument of the Golden Age of Greece.

the more central of which is supposed to have given access to the Persians. These were the works of a people whom we do not know, not even by fable. But we can also see traces of an occupation of the city by another race, existing here long before the Greeks, who were to make Athens one of the greatest forces in the world, took possession of the city. They have left the mark of their occupation in the mighty Pelargicon, a double band of fortifications encircling the whole of the Acropolis and built, not on the rocky pre-eminence, but on the plain beneath; the inner line, certainly, hugging the circuit of the citadel. That is all we know of the Pelasgi; they were swept away, and the vigorous tribe of the Greeks took their city and made use of their bulwarks. But we are now on the borders of history: we can see the little community growing; from a horde of barbarians they are becoming a civilized state. Shadowy kings make their appearance, and give place to the nine archons who ruled the city. The title of these men is made famous by the great Solon, who was archon eponymous, and perhaps the greatest law-giver the world has ever seen. As an old man, however, he saw the system that he had taken so much pains to perfect swept away by a reaction, and Pisistratus take possession of the rock fortress that was the key of Athens and assume the jurisdiction of a "tyrant." The Acropolis underwent a splendid transformation during the lifetime of Pisistratus and his sons. Palaces and sumptuous buildings were reared on the lofty site. A marble temple—the old Hekatonpedon—was reared to the honour of Athena, and down in the city beneath the temple of Olympian Zeus was commenced. But the reigns of the tyrant and his sons did not last long; and in 500 B.C. democratic government was re-established by Kleisthenes, the Acropolis was deprived of its recently-acquired kingly pomp and became once more the citadel and sanctuary of the rapidly-increasing community. The wars with the Persians, however, were now at hand, when Athenians were called to awaken the patriotism of the Grecian states and, under Miltiades, to lead the resistance against an overwhelming enemy, and although the battle of Marathon was won, they had to pay dearly for their resistance. Their fortress was taken by the enemy, the sanctuaries

were burnt and the temples and bulwarks cast to the ground. Had not Themistocles risen to lead his countrymen and to nourish that patriotism which had already cost them so dear, the great city whose ruins we venerate to-day could never have been built. But his devotion and genius were amply rewarded, for after the battle of Platæa, in B.C. 479, Persia found herself obliged to withdraw the borders of her kingdom behind the banks of the Euphrates and Greece was left free to interest herself in her own aggrandizement and rebuild her ruined cities. Foremost amongst these cities was Athens, and immediately the danger of defeat was at an end the Athenians repaired their citadel. Their women and children, it is said, were employed in the work, and, indeed, every help was needed; there were walls and bastions to be built up again, statues carried off by the Persians to be replaced—as, for instance, those of Harmodius and Aristogeiton—and the sanctuaries of the gods to be re-erected on a scale of greater splendour than before. Themistocles himself directed the rebuilding of the walls, and the remnant of these splendid structures can best be seen on the north side of the Acropolis, the curious part of their workmanship being the diversity of material used in their construction. All the fragments of the old wall, of statues and votive tablets, were used up again, and—most interesting of all—there are visible to-day the drums of the pillars of the ancient Parthenon, somewhat chipped to accommodate them to their new position. These can easily be distinguished, for they form a continuous row in the northern foundations of the walls of Themistocles. But the genius of the great archon found even greater work than was comprised in the fortifications of the Acropolis. He realized that Athens, in order to increase her prosperity and wealth, must have safe harbourage for the commerce which was the source of that wealth. The Piræus alone afforded a fitting harbour for vessels, and he therefore conceived the idea of securing this port to Athens by a series of fortifications, which he immediately set about erecting. Built of finely compacted blocks, they were about ten feet thick and upwards of sixty feet in height, protected further by flanking towers. These fortifications of the Piræus were joined to the Acropolis by a series of long walls. It is not certain whether there were two or three parallel fortifications, but, be that as it may, it was a magnificent scheme, worked out with a skill that has made it the marvel

Photo by] [*The Photochrom Co. Ltd.*

THE ERECTHEON, ATHENS.

A view showing the famous Portico of the Maidens, so called from the colossal caryatides which support the flat stone roof.

of succeeding ages; though few are the remnants to be seen to-day. Athens was now at the summit of her glory and to the fifth century before Christ belong the chief of her glorious monuments, and to Themistocles, Cimon and Pericles belongs the honour of ennobling Athens with her finest structures. Amongst these stand the Parthenon, the Erectheon, the Propylæa and the temple of Nike Apteros.

Before describing fully the Parthenon, it is necessary to consider for a minute the structure of a Greek temple. Suppose we enter from the east, we shall then ascend some steps, the top of which is termed the stylobate. From the stylobate rise up the columns that support an architrave, then an entablature, and finally a pediment. We will walk through these columns directly westward, and in a pace or two we reach a second row of columns, or pilasters, that support the main building. Passing through these, we shall be in the pronaos, or vestibule, of the temple. Another door in the west side leads us to the naos, the most important part of the temple, for here stood the statue of the god to whom the temple was dedicated. This and the pronaos were often

Photo by] *[The Photochrom Co. Ltd.*

THE THEATRE OF DIONYSOS, ATHENS.

Here were enacted the masterpieces of the Greek Drama. The stage and orchestra are of Roman workmanship, but the auditorium is Greek. The front row of marble seats was reserved for the Priests of Dionysos.

spoken of under the collective name of the cella. From the naos entrance is gained to another chamber, the opisthodomos, which was a rectangular chamber and was considered the most sacred part of the building. Only those devoted to the service of the deity were allowed to enter there, and often it was the scene of rites forbidden to be participated in by the common people, who waited in the cella beyond. The sacredness of the place was put to good use by those most interested in the temple, for here was stored the wealth of accumulated votive offerings which poured in from the special suppliants at each shrine. In fact, just as at Delphi the hallowed shrine of the oracle was used as a safe deposit for the wealth of private persons, so, too, the opisthodomos of a Grecian temple became a state storehouse that even the most rapacious of robbers dared not violate. Finally, the opisthodomos led out through a central door to the first row of columns that supported the roof, and so to those that were ranged at the edge of the stylobate, from whence steps descended to the pathway.

The Parthenon is the most magnificent monument of the Golden Age of Greece, that is the period of the Archonate of Pericles. Already two temples to Athena had risen and fallen on the site of the present ruins; but the columns we now see were erected after the Persian war, when the invading hosts had been sent back and victory shone on the ægis of Athena Promache.

Photo by] *[The Photochrom Co. Ltd.*

THE PROPYLÆA, ATHENS.

The Romans built the magnificent flight of marble steps which covers up the ancient approach to the Propylaea proper, but the Doric pillars standing on the stylobate are part of the original gateway—the most important secular work of Ancient Athens.

From Stereo copyright by] *[H. C. White Co.*

THE TOWER OF THE WINDS, ATHENS.

A private citizen, Andronicus Kyrrhestes, built this marble tower for the accommodation of a weather-vane, a water-clock, and sundials. The eight sides of the building are turned towards the chief points of the compass.

It was natural that the proudest temple of all Greece should be dedicated to the goddess who had caused her foes to be driven back. So Iktinos and Kallikrates drew out the plans for the Parthenon, while Phidias was busied with the designs and himself sculptured some of the ornaments. So great was the zeal displayed in the building, that this magnificent structure of Pentelic marble, begun in the year B.C. 447, was dedicated at the Panathenaic Festival of B.C. 438 to the worship of the Maiden Goddess by the erection of her statue in the cella. From the data of ancient writers and the remnants of the edifice that are before us to-day we can decide the exact form of the building. Raised on a substructure (which was necessitated by the unequal surface of the ground it covered) was the marble base, rising in three steps. On the topmost stood the outer framework of columns, showing eight at each end and seventeen on each side. The general height of the columns is thirty-four and a half feet, and they are composed of twelve sections, or drums, of marble. The flutings, which are a marked feature of the Doric order, are twenty in number. These columns are one of the most striking features of the Parthenon, and their suggestion of strength and grace, combined with the translucency that age imparts, and which gives an added glory to all marbles, creates an impression of a ruin, not merely of a Greek temple, but rather of a colonnade built by the gods themselves. Yet this most perfect specimen of Doric architecture can boast of other splendours that have not their like throughout the whole world. There is the wonderful entablature, resting, with the architrave, upon the forty-eight columns to which reference has just been made, and the magnificent pediment forming the triangular stonework immediately above the architrave at the east and west of the building, whereof the remnants of archaic Greek statuary which ornamented the tympanum, or hollow part of the pediment, are among the most famous productions of the archaic period of Greek sculpture. As far as we can tell, the scene carved on the west front is that of the victorious Athena, who has put to rout with her ægis the advancing chariot of Poseidon; while on the east Athena is born, according to the legend, fully armed, from the brain of Zeus, with the attendant deities of good omen, although the carving is so worn that the exact types represented are uncertain. Probably both pieces of sculpture had a meaning relating to the mythical foundation and historical growth of Athens. It can easily be credited that Poseidon typifies the Persians, who so lately had been defeated, while in the goddess the Grecian state was symbolized.

Mention must be made also of the zoophoros, or frieze, adorning the exterior wall of the

cella at a height of thirty-nine feet from the pavement. The cella was the large inner chamber, or temple proper, to which the marble columns formed an exterior colonnade, and the frieze was, therefore, under the shadow of the roof of the temple, with all the light falling on it from below. This the Greeks realized, and carved the frieze accordingly in low relief, so that there should be no great dark shadows which would disfigure the ornament ; all should be touched with the subdued light that reached these most exquisite bas-reliefs. On it were represented scenes from the festivals held in honour of the goddess. What was the complete effect we cannot now tell ; but from what remains to us we can judge of the magnificence of these sculptures ; and when one realizes that the whole was in rare white Pentelic marble, with the carvings brought out into relief on backgrounds of blue and red, while here and there on parts of the building hung decorative wreaths of beaten gold : when one realizes, too, the power of the Grecian sun falling on the grey Acropolis with its snowy crown, the mental eye is dazzled with the conception—as, indeed, all men who have thought upon it have been dazzled ; so that the opinion of the civilized has united in declaring that this was truly a wonder of the world.

Had she possessed the Parthenon alone, Athens would have been a famous city ; but she is thrice favoured among cities, for she has other treasures. Not a stone's-throw to the north of the Parthenon is the Erectheon, or House of Erectheus, which was perhaps even more sacred than the grander structure ; for sheltered in the cella was the humble little wooden image of Athena Polias, or the guardian Athena, and here, too, was the sacred spring of salt water that gushed forth when Poseidon struck the rock with his trident ; nor must we forget Athena's sacred myrtle, which, when burnt down by the Persians, shot forth a great branch an ell long on the succeeding day, thereby encouraging the disheartened Athenians to fresh efforts, which ultimately were crowned with victory. It was fitting, therefore, that a splendid memorial should mark this sacred spot, and so on the site of the old temple, which was destroyed in B.C. 480, the most perfect Ionic temple was erected. So anxious were

Photo by] [*The Photochrom Co. Ltd.*

THE THESEUM, ATHENS.

This is the most complete Greek temple now standing, and although not so elaborate as the Parthenon or so ornamented as the Erectheon, its colossal proportions make it a notable monument of Ancient Athens.

the Greeks to consecrate the spot with a memorial to the gods, that immediately after the Peace of Nikias was made, the building was commenced; but the Peloponnesian War suspended the work, so that it was not completed till B.C. 407. Although the appurtenances of the temple were Ionic, the plan did not take the prescribed form for instead of a portico at the west end, there were two square wings, which formed a transept, and which make the building unique. The most famous is the one on the southern side—the Portico of the Maidens—so-called after the six caryatides standing on a parapet and supporting the entablature. On their heads they carry baskets which are ingeniously contrived to form capitals. The roof was flat, for three of the four stone slabs that composed it are still *in situ*. This portico is a monument of supreme art, giving expression to the beauty of the human form and the nobility of conception to which the human mind can, if it will, attain. Near here, to the north of the north porch, has been discovered a very ancient staircase

Photo by] [*The Photochrom Co. Ltd.*

THE TEMPLE OF OLYMPIAN ZEUS, ATHENS.

This enormous temple was erected by the Emperor Hadrian. Only fifteen of the colossal Corinthian pillars are now standing. The central of the three foremost columns was blown down in a gale in 1852.

cut in the living rock, by which the Persians are supposed to have entered the Acropolis. It was also connected with the secret rites on the sacred maidens attached to the Erectheon.

The Propylæa is the last of the great monuments of the Acropolis; it was the grand and state entrance to the rocky height. It is the most important secular work of ancient Athens, and consisted of a central gateway and two wings, erected by the architect Mnesikles. Entering through the western portico, we ascend three mighty steps; we pass through the midst of a line of six Doric columns, then through a corridor bordered with columns—or, rather, there should be the corridor, but the six Ionic pillars of which it was composed have fallen, and only their position can be traced. We now reach the Propylæa proper, which is of solidly constructed masonry, with five gateways that at one time had solid bronze doors, and continuing, we come to the western portico, which, like the eastern, is adorned with six Doric columns. Upon two of these the stone that formed the architrave still rests, and its enormous size, as well as the magnitude of the broken remains scattered all around, demonstrate the perfection of the engineering which could swing these monoliths to their place and build up the magnificent structure. Space forbids a detailed account of this "brilliant

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THE ODEON OF HEROD, ATHENS.

Built by a wealthy Athenian, Herodes Atticus of Marathon, in honour of his wife, Regilla, this magnificent odeon or theatre occupied the plain at the foot of the southern side of the Acropolis.

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THE TEMPLE OF NIKE APTEROS, ATHENS.

This beautiful little temple, built on a bastion of the Wall of Cimon on the south-west of the Acropolis, is especially noted for the splendid frieze, four panels of which were brought to England by Lord Elgin and replaced by terra-cotta duplicates.

jewel on the front of the conspicuous rocky coronet of the Athenian Acropolis," but it is well to point out that there were two porticos on the north and south sides of the principal western portico. The northern of these was dedicated for the display of votive offerings. The Propylæa was also covered in with a magnificent roof which till 1650 was intact, but was then destroyed by a Turkish cannonade. It was very elaborately moulded, and the sunken panels, or metopes, were adorned with gold stars on a blue ground.

We cannot leave the Acropolis without mention of the charming little temple to Athena the Victorious, miscalled the Wingless Victory, or Nike Apteros. It is built out on a bastion, erected during the constructive works of Cimon, and is particularly famous for its frieze, which has for the most part been preserved, although much damaged by the vicissitudes of war and time, while four panels have found a resting-place in the British Museum, brought thither by Lord Elgin, and only terra-cotta duplicates supply the gaps caused by the abduction of the originals. As all the heads of the noble figures are wanting it is difficult to distinguish the characters of the frieze, but undoubtedly the subject of the sculpture is a glorification of the victorious goddess, with sacrificial thanksgivings in her honour. Shattered and spoiled as these noble fragments are, they even now suffice to endow this little temple, built entirely of Pentelic marble, with a beauty that is unapproachable for dignity and restraint.

Descending from the Acropolis to the plain below, we must not neglect to visit the Thesion; for here stands the best preserved of the temples of the whole of ancient Greece. It is not so elaborate as the Parthenon, nor so ornamented as the Erectheon, but its colossal bulk and its thirty-six marble columns which surround the stylobate combine to form a most imposing structure. Only the metopes on the eastern front of the entablature are carved, but the want of decoration is not felt; rather the absence enhances its solemn splendour, and testifies to the power of the religion which inspired the building of the mighty fane. It is worth while noting here that the pillars, as in all Grecian architecture, are not formed in one straight shaft. Each has a light swelling, or entasis, in its central girth, and this gives the effect of a perpendicular line to the eye. In fact, scarcely a line in the whole composition of a Grecian building is straight; each is intentionally curved. For instance, the marble steps leading to the stylobate of the Parthenon are curved, the

cornices that surround the pediments are also curved, and each of the columns leans slightly inward to counteract the thrust of the roof. Each style of architecture has its method of meeting this contingency: the weight of the roof of a Gothic building is designed so as to fall on the flying buttresses which form so distinct a feature of these structures, and again, the dome of a Byzantine building has its weight resting on the curve which it forms; but nowhere have science and art reached such a state of perfection that they have combined to form so harmonious and serviceable a monument as a Greek temple. One mystery, however, still remains to be solved. How was a Greek temple lighted? Little is known on the subject, for not enough standing ruins have survived to assist in the solution of the problem. It is probable, however, that the only light entering within the shrine came from the mighty doorways, and that further illumination was supplied by the lamps burning always before the statues of the gods. Nor is there any reason why this should not be the answer to the question. It is quite possible that these lamps would give sufficient light to the assembled worshippers, for, as far as we know, services such as we understand by the term were never held within the temple. Sacrifices and religious processions took place outside, and only small bodies of suppliants found their way within. To these the dimly-lit halls of the gods, contrasting with the brilliant light that pervaded the outside world, would intensify the majesty and mystery surrounding their belief and their senses would be stirred by the golden glimmer and the faint exhalation of incense to strange depths of religious fervour.

But we must hasten on to the Olympeion, or Temple of the Olympian Zeus. Originally designed by the tyrant Pisistratus, it was left till the time of Antiochus (B.C. 174) and his architect Cossutius for the scheme to be carried out, but death hindered the King of Syria from completing his plan, and long the temple remained unfinished, until Hadrian, in A.D. 130, completed the work. But the huge building was fated to be again destroyed, although the exact cause of this destruction is unknown. All that we do know is that there now remain to us fifteen huge Corinthian pillars, fifty-six and a half feet high, one of which was blown down in a storm in 1852. The proportions of the building are typical of Roman enterprise, for the Romans were a people wanting in the acute judgment and fine artistic qualities of Greece; they delighted rather in mighty structures, and so contemplated with pride the enormous temple they had erected at Athens. Hadrian it was, too, who erected the arch dividing the

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THE PRISON OF SOCRATES, ATHENS.

Tradition reports that the Greek philosopher inhabited the caverns which bear his name, but in the opinion of archaeologists these are rather burial vaults of a race of the Mycenaean age.

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GALLERY OF THE CITADEL, TIRYNS.

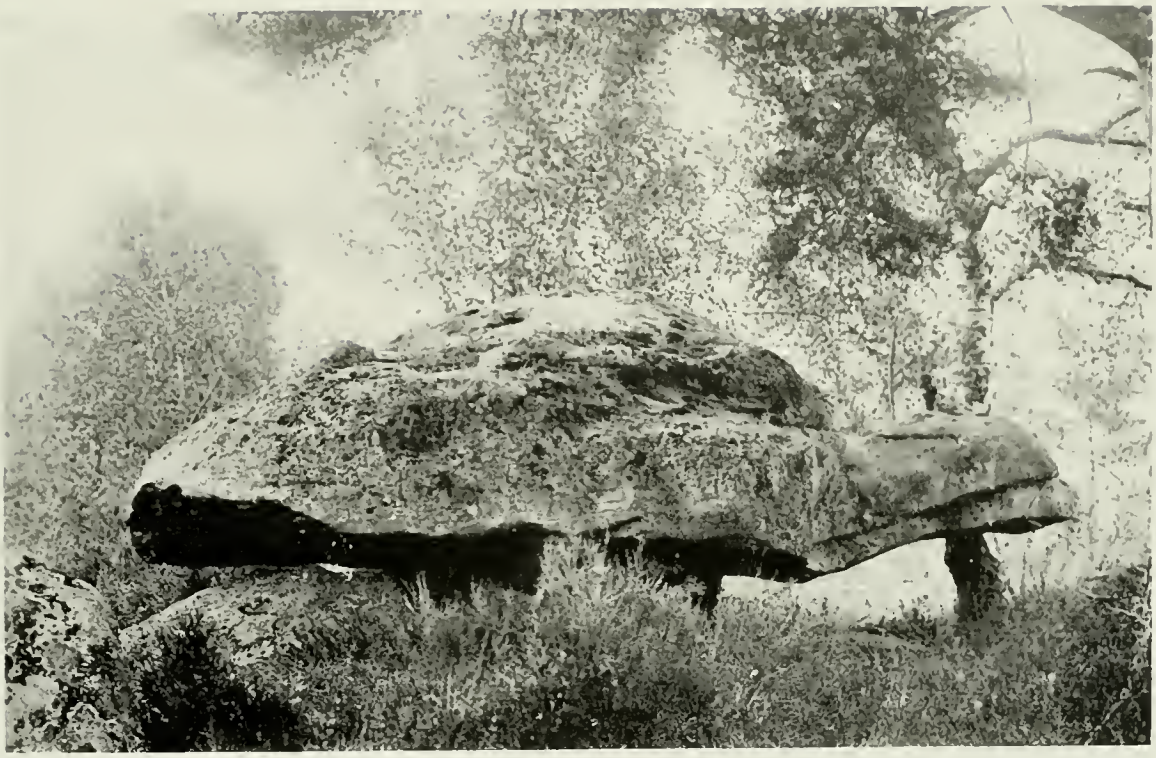
Tiryns, situated in the west of the Peloponnesus, is one of the finest cities built in the Mycenaean Age. The cyclopean walls here shown are composed of enormous hammer-dressed stones, and form a vaulted gallery.

old Greek city from the new part which sprang up during his rule, and its purpose seems to have been to define the limits of the two cities; for on one side a Greek inscription ran: "This is Athens, the old city of Theseus," and on the other: "This is the city of Hadrian, and not of Theseus." The self-confidence of the Roman is displayed in these words, but it was the self-confidence of overgrown pride, and the whirligig of time has brought its revenges; for which is the more honoured of the townships to-day—Ancient Athens or the Athens of Hadrian?

At the end of the Rue d'Eole stands an octagonal marble tower. It is called the Tower of the Winds, and is the erection of Andronicus of Kyrrhos, built for the accommodation of a water-clock, a sun-dial and a weathercock. The clepsydra is gone, and so is the weather-vane, although the lines of the sundials inscribed on the eight sides are still to be seen. These sides face towards the chief points of the compass, the points being represented on the frieze running round the top of the building by reliefs of the wind gods of the various quarters; Boreas, Kaekias, Apeliotes, Euros, Notos, Lips, Zephyros and Skiron are all there, but the sculpture is poor. An octagonal pyramid forms the roof, on the apex of which stood the vane—a triton blowing a horn.

We have already mentioned the cyclopean walls which encircled Athens at a time previous to the commencement of actual history; and we must return to that period to discuss the caverns which are to be found in certain localities of older Athens. One of these is termed the Prison of Socrates, and is situated on the north-east of the Hill of Philopappos, about a quarter of a mile south-west of the Acropolis. All that there is to be seen when we have passed the wooden gates are three chambers hewn out of the living rock. The central one of these is unfurnished, but in the chamber to the left marks of a sarcophagus are to be found on the floor. This points to the use of these caves as burial vaults by a forgotten people of the Mycenæan age. How the legend arose that this was the prison of the Greek philosopher it is impossible to conjecture, for the Athenians regarded these caverns as sanctuaries, and there is no reason to believe that they were put to any profane use. Without doubt the Prison of Socrates belongs to the same period of construction as the caves of Pan and Apollo in the Acropolis.

Built on the plain below the south-east corner of the Acropolis is the Theatre of Dionysos, perhaps better known as the Theatre of Bacchus. To the traveller looking down on it from above the shadows that people the dramas of Greece take life, and, as it were, occupy the empty stage and ruined auditorium; for this semicircle was the centre of dramatic life of Greece. From here the weighty words of Æschylus and the graceful plays of Menander were given to the Athenian playgoer,



Photos by] *[Underwood & Underwood.*

THE ROCKS OF FONTAINEBLEAU.

These curious sandstone formations are to be found in the magnificent forest which is attached to one of the most famous châteaux of France.

Photo by] [*Underwood & Underwood.*

THE ROCKS OF FONTAINEBLEAU.

and there was once a time when the now forsaken benches were hidden behind the folds of white chita and filmy peploi, whose wearers were swayed with the passion of a great tragedy or broke into delighted laughter at the clever conceits of the satiric Aristophanes.

The stage and orchestra of the extant theatre, however, are certainly of Roman workmanship, for the former is adorned with bas-reliefs of the time of Nero; but the auditorium is nevertheless Grecian and the stone benches that form the ever-widening semicircle have always remained *in situ*. In the front row the seats were of marble, and were reserved for the priests of Dionysos, while others can be recognized as thrones intended for the emperors of Rome. Following the usual custom of Greek theatres, the building was open to the sky.

Before leaving Athens, let us retrace our steps to the Erectheon in order that we may gain a general impression of the noble city. To the north, ten miles away, rises Mount Pentelicus, whose quarries have yielded all the marble used in the buildings of Athens. To the north-west is Mount Parnes, the chief peak of the mountain chain that stretches across north-west Attica and meets the sea as Mount Corydalus. Opposite is "sea-born Salamis," the scene of the memorable defeat of the great armament of Xerxes. Turning southward, low hills separate us from the sea, and the plain from which they rise is dusty and parched. One band of colour, however, breaks up the browns and greys, sweeping from Pentelicus to Parnes. It is the dark green of the olive-plantations that fill the plain of Kephissus, and nearer to the south-west is Mount Hymettus, where, in the spring, myriads of flowers cover the slopes and afford honey for these bees of ancient fame.

As the eye turns nearer home it rests with pleasure upon the fine buildings of modern Athens, the gardens, the palaces and, above all, on the snow-white Stadium; but at last it comes to the relics of the splendour that has passed away—the Parthenon, the Erectheon, the little temple of Nike and the magnificent Propylæa. These are the crown and glory of all Greece, and the dignity of the mighty ruins mingled, as it is, with tragedy of departed greatness, gives to the naturally beautiful scene an especial and unrivalled glory—"Earth hath not anything to show more fair."

Tiryns.—Situated between Nauplia and Argos in the west of the Peloponnesus, is Tiryns, a small village absolutely destitute of interest save for its splendid cyclopean remains; yet these are sufficient to constitute its just claim for fame, as, with the single exception of Mycenæ, they reveal the most

complete picture of the structures belonging to this unknown race. On account of the earlier exploration of Mycenæ's prehistoric capital the name of that locality has been assumed to designate the works of this era, and to archæologists this period is known as the Mycenæan period. In Tiryns are to be found the remains of a complete Mycenæan palace, which are such as to excite not only the wonder of the moderns, but that of the ancients also; for Pausanias, in his "Periegesis," compares Tiryns with the Pyramids, and the opinion of the present century supports his comparison. The walls of the town are called cyclopean by reason of a Greek legend which states that Cyclopes (not the Cyclops), came from Lycia to King Prœtus of Argos and built the giant fortress of Tiryns. Certainly Tiryns is older than Mycenæ, but so legendary a tale must not be taken as a reliable statement of the town's foundation. Excavations carried out in 1884–1885 now enable the palace to be inspected. The main gate is fortified by a tower and leads to an inner passage, by which, after passing another gate, an elaborate propylæum is reached. This leads to an inner court surrounded by a colonnade, which gives it the appearance of mediæval cloisters. In this courtyard to the right of the entrance is an altar and a pit of sacrifice. Continuing on the south side, we come to chambers (thalamoi), probably for attendants, and amongst these a bath-room is to be seen with a sloping floor, which allows the water to drain through a pipe in the wall. Passing through these rooms, we come to the great dining-hall, or megaron, which is certainly the most elaborate part of the palace. An incised pattern of curved design, such as is seen in the earlier Mycenæan vases, ornaments the floor, while the stucco walls are decorated with very effective patterns of scroll work and birds. Perhaps the most prized discovery made here was of portions of a frieze sculptured in white alabaster and ornamented with blue glass jewels.

The illustration shows the passage in the cyclopean walls in the rock citadel. The length of the gallery is seventy-five feet long, and to the right are five rude arches, made by gradually overlapping layers of projecting stones, in the same way as the roof of the gallery is formed. These stones, which are hammer-dressed and roughly squared up, are often of great size, and are held together by smaller fragments of the same material; for no mortar has been used, though it is not improbable that a coating of stucco was added to improve the finished appearance of the gallery.

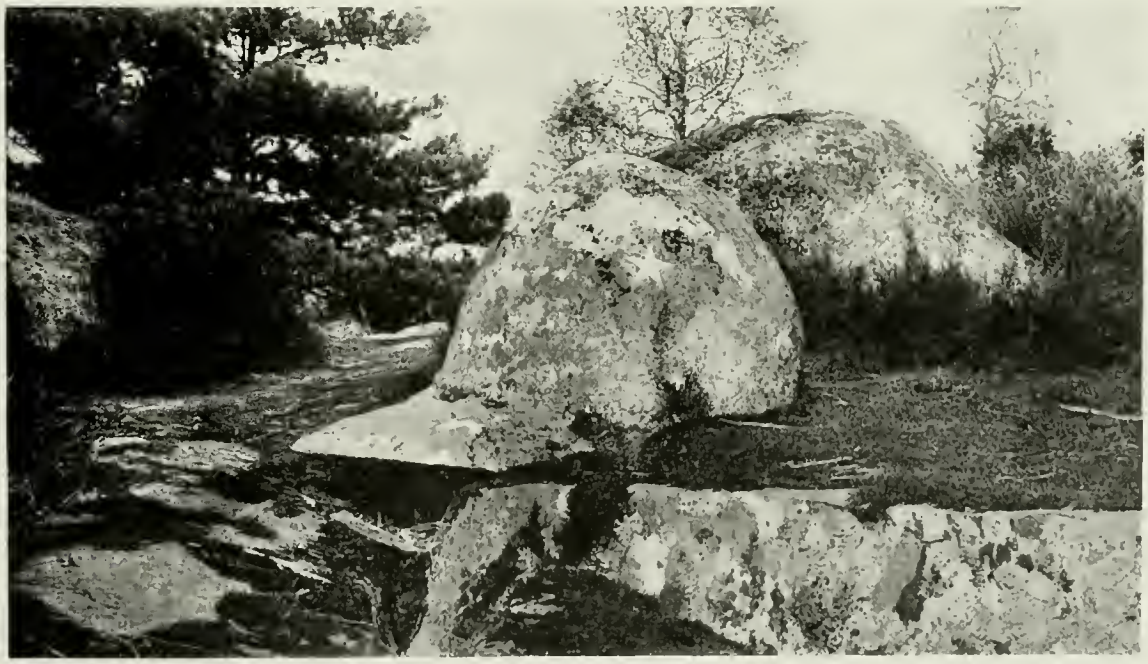


Photo by] *[Underwood & Underwood.*

THE ROCKS OF FONTAINEBLEAU.

The Rocks of Fontainebleau.—Thirty-seven miles from Paris lies a quiet, though by no means a small, town famous for its splendid palace, built by Gilles le Breton and Pierre Chambiges at the command of Louis VII. of France. This is the celebrated Château de Fontainebleau, where Francis I. received his dangerous rival, Charles V. of Germany, and where, three hundred years later, the great Napoleon loved to hold his court. From here was the divorce of the unhappy Josephine promulgated, and from here, not so many years later, Napoleon himself abdicated—divorced, indeed, of his throne and his people. But besides a palace, Fontainebleau has a forest, the most beautiful in France, extending over a space of forty-two thousand five hundred acres, with a circumference of fifty miles, and enriched with some splendid trees and magnificent scenery. More curious, however, if not so beautiful, are the famous sandstone formations that abound here. They are situated some three miles from the town of Fontainebleau, and to see them we must follow the Route de Paris, then branching off on to the Route de Milly, take a footpath to the left, and soon we shall come upon these curious examples of erosion. They are sculptured by Nature out of the

Photo by] *[The Photochrom Co. Ltd.*

ST. PAUL'S CATHEDRAL, LONDON.

A view of St. Paul's from Blackfriars Bridge, which shows the beautiful dome to its fullest advantage.

grey sandstone, and little imagination is required to give names to these curious monoliths. Here is one for all the world like an elephant—that is, if we allow a slight laxity in the rules of proportion, and there, as if creeping out of the undergrowth, is a giant tortoise. Soon another and yet another strange shape comes into view—but we will leave the illustrations here given to speak for themselves.

St. Paul's Cathedral, London.—St. Paul's Cathedral is best described as the most national cathedral church of the British Empire, and a moment's thought of the great fane standing on the height overlooking the city—a symbol of the great heart of a nation, from which the pulse of national life flows and to which it returns—easily proves the truth of the description.

For two centuries the noble pile of Sir Christopher Wren has towered in calm majesty over the bustling humanity crowding it in on every side. The sorrows and the rejoicings of the nation have passed over it; generations that are the sport of time have been swept away, but St. Paul's still watches over the great city, still majestic, still unchanged, save that perhaps as year succeeds to year fresh memories cling to the nation's temple, just as a little more of the mart's ugly grime is left on the grey stone walls.

Three churches have stood on the site of the present cathedral. The first was that founded

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ST. PAUL'S CATHEDRAL, LONDON.

A view of the western facade, with its two bell-towers, from Ludgate Hill

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THE MONASTERY OF ST. STEPHEN, METEORA.

These strange homes are built on the crags of the mountainous region of Northern Thessaly. They are inaccessible save for the craziest of ladders or by means of a rope basket drawn up from above by a windlass.

in A.D. 610 by King Ethelbert; the second was a Norman Gothic structure, to replace the earlier church, which was destroyed by fire; and when that, too, became a prey to the flames in 1666, Sir Christopher Wren was commissioned to build the present cathedral, which was not finished till 1711. The architect had many difficulties to contend with before he completed his great task. Two designs were submitted which were not approved of by the building committee, and even the third, which was finally adopted, was subject to many alterations, and furthermore, Wren was hampered in the building materials which an ignorant committee demanded should be used. One of the details which sorely vexed him was the substitution of the heavy cast-iron railing which surrounds the building for the elegant wrought iron-work which he desired to erect. Another was the painting of the dome when his wishes were that its vastness should be emphasized by the jewel-like brilliancy of mosaics. Nevertheless, the building is an example of modern architecture worthy of the man who designed it, and it is besides thoroughly typical of the nation in whose midst it stands. It is vast, and even if somewhat ponderous, eloquent of strength. Delicacy of outline and meretricious splendour have been discarded in favour of the more solid virtues of fitness and thoroughness of execution: for although built after "a good Roman manner, Sir Christopher Wren was not acquainted with the Roman system of construction, and we have a building which not only seems to be, but really is, built of stone, within and without. The arches, cornices, vaulting arches, and all wall surfaces and carvings are of stone. . . . The leading architectural lines are in solid wrought stone, and are an integral part of the structure."

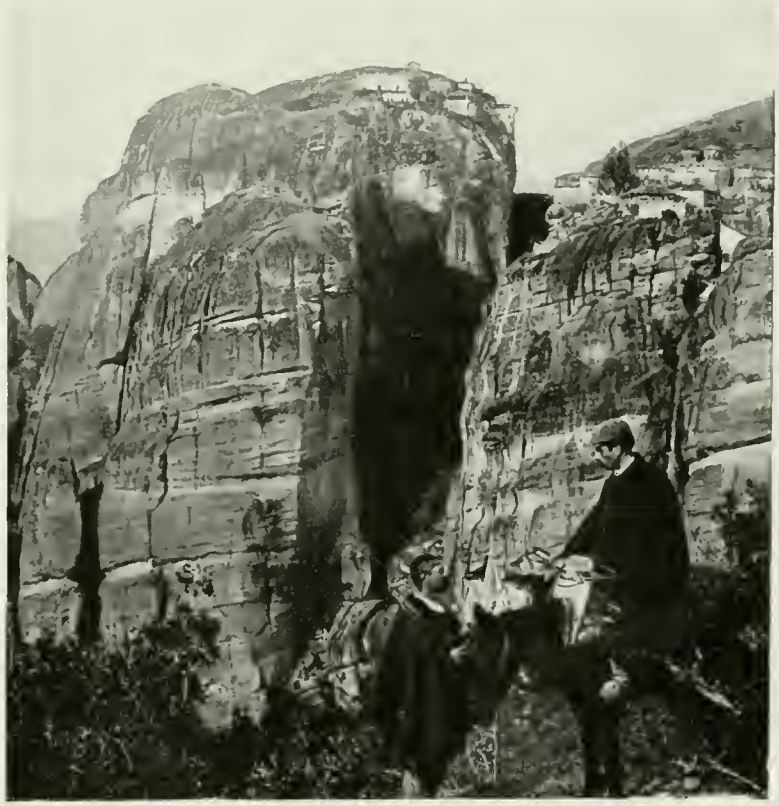
Besides this, authorities have eulogized the great unity in this masterpiece, which is due no doubt to the fact that the whole was completed in the lifetime of the designer, and the practical work was supervised throughout by one master-mason—two essentials in the working out of any great undertaking. The lower story of the building is Corinthian, the upper of Composite order, with a double portico on the east side flanked by two bell-towers. The cupola rises from the body of the church, the dome standing on an Attic order encircled by a balustrade, resting on a peristyle of Composite order. This, with its lantern, is crowned by a gilt copper ball and cross. North and west under the dome branches the transept, which terminates at either extremity in a

circular portico supported on Corinthian pillars. The length of the cathedral is four hundred and sixty feet and its height three hundred and sixty-five feet from the ground.

Much fine work has been lavished on the interior, although even to-day the mosaics ornamenting the elaborate vaulting of the body of the church remain unfinished. The choir stalls, carved by Grinling Gibbons, are magnificent specimens of this famous artist's work, and were erected at a cost of over thirteen thousand pounds, while the ornamental iron gates in the Cathedral are the work of the celebrated Tijou. Many men whom the nation has delighted to honour lie in the shelter of the great dome, but none had greater claim to the right of sepulture here than he of whom it is written over the north transept porch : " Lector, si monumentum requiris, circumspice."

The Cliff Monasteries of Meteora.—On the northern side of the Peneius Valley, thrust forward like outposts from the Cambunian chain of mountains, are two masses of greyish-brown rock, which are split towards their summit into towers and pinnacles, varying from a height of perhaps eighty feet from the main bulk to as much as three hundred feet. These gaunt and precipitous rocks of Thessaly would hardly strike the observer as suitable for the habitation of man ; but at a time when the noblest purposes of religion were held to be fulfilled in a life of seclusion, and when the mind of the ascetic sought to be released from all contact with the struggles which were rending the very heart of Christendom, what grander peaks, what more isolated position could be chosen for the foundation of a monastery ! So it came about that during the fourteenth century these silent heights were peopled with still more silent monks, and convents arose perched high on the grey escarpments, like strange nesting-places. There was no means of access to these queer abodes except by a rope and net of strong knotted cord, which was worked by a windlass from above, or else by the craziest of ladders nailed almost perpendicularly to the bare face of the rock. The same conditions of entry to the monastic precincts are in vogue to-day, and the only difference in the surroundings is that, whereas in the beginning of the fifteenth century twenty-four monasteries were huddled together on the summits of these cliffs, there are now only four — the Great Monastery, Holy Trinity, St. Barlaam's and St. Stephen's —which are of any importance as regards the number of the occupants, and these together only total about thirty persons.

On account of the cramped area at their disposal the resources of these primitive monk builders were taxed to the utmost ; and how they



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METEORON AND ST BARLAAM, METEORA.

Greek monks founded these monasteries in the fourteenth century to separate themselves from the turmoil of those times. At one time there were twenty-six buildings huddled together on these heights. Now only four are inhabited.

Photo by permission of] [*Rev. T. W. Fawthrop, F.R.G.S.*

THE SOLFATARA AT POZZUOLI.

At this little village, on the side of Naples remote from Vesuvius, the huge crater of a dying volcano may be explored. In one part small boiling pools, emitting quantities of sulphurous smoke, testify to its latent activity.

managed to build a chapel, a refectory, cloisters, and a sufficient number of cells for the several inhabitants of each monastery is a matter of some wonderment. To-day St. Stephen's is the richest conventual home and possesses one of the finest Byzantine chapels in Greece; but perhaps of more antiquarian interest is the rock-hewn chapel of St. Barlaam, adorned with paintings from the legend of St. Ephraim.

The Solfatara, Pozzuoli.—The Neapolitan possesses a unique advantage in the study of the life-history of a volcano, for on one side of him rises up the huge bulk of Vesuvius, the monstrous Titan, always in a state of unrest, with relentless fire gnawing at his vitals, and on the other side, a mile or so out, in the neighbourhood of a little village called Pozzuoli, is a vast crater of a dying volcano, which signifies its malevolence only by spasmodic outbursts of sulphurous steam. It is interesting to walk over this crater along the paths of yellowy-white potter's clay, bleached by the heated sulphur permeating it, and to examine the flowers tall heaths, and blue gentian scattered over a thick carpet of little white stars, which spring up on all sides. But as the deeper part of the crater is reached, evidences are not wanting of the latent heat which is lurking

Photo by] [*The Photochrom Co. Ltd.*

VENICE.

A general view of this beautiful city, lying "like a sea-bird's nest," in a lagoon of the Adriatic.

underground, for the plants become scarcer and the clay soil hotter and hotter, till at last the crust is only nine inches thick and the warmth underfoot is too violent to be pleasant. Presently gaps are to be found in the flat surface—little round hollows, in which the earth boils and bubbles continuously, giving off clouds of hot steam that often obliterate the little lake from sight. Farther on are some loosely-piled calcareous rocks, and let the guide take a torch and pass it across the uneven surface. Almost instantaneously a dense cloud of steam will arise, hot and choking; out of every crevice it pours, and even from the higher level of the crater slope. This in itself is sufficient warning that the dangerous zone is only quiescent, and the most careless onlooker is forced to realize that a volcanic outburst may even yet take place in this apparently exhausted volcanic zone. If he want further evidence, let him grope his way into the caverns on the northern side of the crater; he will be unable to explore them to their final depths, for before he has crawled very far he will be forced back, baffled by the scalding steam and choking sulphur fumes. This, he must remember, is in a locality unrenowned in historic times for any particular eruption or as the cause of any noteworthy disaster; and he will concede that the Solfatara at Pozzuoli is a strange marvel of this marvellous region of volcanic activity.

Photo by] [*The Photochrom Co. Ltd.*

THE DOGE'S PALACE, VENICE.

There are few buildings more striking in appearance or more lavishly decorated than the Doge's Palace, which skirts the Piazzetta dei Leoni. History, besides, has given to the structure a fame as romantic as it is illustrious.

Venice.—

"Once she did hold the gorgeous East in fee,
And was the safeguard of the West . . ."

Wordsworth, in these famous lines on the Venetian Republic, was alluding to the wonder-history of the little Italian state, which, nestling like a swan in the blue waters of the Adriatic, held at one time an unrivalled position in the affairs of Europe. Roughly dating the period of her triumphant reign from the dogeship of Orseolo the Magnificent, it may be said that Venice became the mistress of the glories of the East and the riches of the West from that time onward until the disastrous rule of Giovanni Cornaro and the paralysing Peace of Passarowitz, in 1718, destroyed the last remnants of her faith in herself, and she became "the loose and wanton realm of modern Europe." Her peculiar position was favourable to Venice; she was the port of call for all the eastern merchantmen, and in her harbours were unladed the rich bales and costly treasures which were the products of the caravans from Arabia, the bazaars of Constantinople, and the fertile valleys of the Nile under the Saracens. From her shores were launched the vessels which took the Crusaders to the land of the Soldan, and on her *piazze* and quays the flower of Christian chivalry and European wit mingled with the most enlightened traders of Asia, Africa and Spain. With the interchange of goods came also the interchange of learning, culture and political ideas, so that into the lap of Ocean's nursling rained not only the wealth which built her palaces, but the enlightenment which produces men of intellect and inspiration. Venice attracted to herself all the most zealous of such men, who, seeking to express in form their lofty ideals, trained hand and eye to obey the dictates of the soul, and through the medium of precious metal or costly marble, rare wood or delicate pigment, created such masterpieces that her palaces and churches glow with a resplendency which was the pride of her citizens and is the delight of all time. Chief amongst her treasures must be counted the Ducal Palace—"a piece of rich and fantastic colour—as lovely a dream as ever filled the imagination." The romance of history and the sanctification of poetry have softened

the errors of architecture which can be pointed out by those best qualified to judge of the exterior of the Ducal Palace; but the magnificence of the interior and the noble workmanship displayed therein have never been questioned; and as one passes through the beautiful Porta della Carta, enriched with sculpture, to the Grand Court, with its magnificent well-head of bronze, and looks across to the Giant's Stairway, a mass of exquisite marbles and sculpture and inlay work, leading to the two huge statues of Mars and Venus, one has already forgotten the objections of the critics with regard to the deficiencies of the building. But other masterpieces demand our attention. On the left of the loggia reached by the Giant's Staircase is the famous Scala d' Oro of Jacopo Sansovino, a mass of marble and gold, the ceiling enriched with arabesques and bas-reliefs, which are delicate enough to be the work of fairy hands rather than the *chef-d'œuvre* of a master of the sixteenth century. There is also the Sala del Maggior Consiglio, or Grand Council Chamber, which was begun in A.D. 1310 and completed in 1334, but fated to be destroyed by fire two centuries later, and finally to rise like a phœnix from the flames to a state of even greater magnificence—for here are some of the most famous paintings in the world, notably the Paradise of Tintoretto, which occupies the whole of the east wall. Round the hall, too, is the famous frieze containing portraits of seventy-six doges, marred by one blot on the roll of honourable names. The space which should be occupied by the portrait of Marino is covered with black and bears the inscription: "Hic est locus Marini Falethri decapitati pro criminibus." ("This is the place of Marino Falieri, beheaded for his sins"); for Marino was Doge of Venice, but stung by the inadequate punishment of a roysterer who insulted his wife, he used his high office for the instigation of a conspiracy against the state. His guilt was discovered and in expiation thereof he was beheaded.

This Hall of Council was used by the nobles whose names were inscribed in the Libro d' Oro (or Golden Book), and who formed the most important power in the state assemblies. Usually these meetings were to discuss state affairs, though banquets and other ceremonies occasionally took place here. But we must not linger over even so beautiful a treasure-house as this palace. Venice has other perhaps more notable buildings, and particularly to be mentioned in this respect is the Cathedral of St. Mark. No European church can compare with it in its jewel-like beauty; others may vie with it in architectural qualities, or in size, but St. Mark's makes no pretensions to such characteristics.

Photo by permission.]

THE DOGE'S PALACE, VENICE.

Showing the double marble colonnade designed by the Buoni which surrounds the whole of the structure and the beautiful loggetta over the principal entrance.

Rob it of its ornament and all that is left is an ordinary structure in the Byzantine style, with the usual arrangement of narthex in front of a five-bayed façade and the main body of the building in the form of a Greek cross, the central space supporting a dome and a cupola rising from the midst of each of the four divisions of the cross ; but add the double row of pillars that adorn the façade, each carved with a richness which is more than art, indicative rather of a divine zeal, add the rich beauty of the material from which they are chiselled—Greek marble, porphyry, verde antique, jasper—add the magnificent mosaics adorning the recesses and the interior and covering an area of forty-five thousand square feet with the richest jewel work that the world has cognisance of ; add, too, the noble group of bronze horses —" their gilded collars glittering in the sun " —which surmounts the central portico, and finally add the bronzes, the sculptures, the shrines, tombs,

Photo by] [*The Photochrom Co. Ltd.*

THE INTERIOR OF ST. MARK'S, VENICE.

The decoration of this most gorgeous interior is chiefly carried out in mosaic work, which for its richness and lustre rather resembles jewel-work. Wonderful carvings and bronzes by master artists and craftsmen add also to its splendour.

reliquaries, candelabra, each one a miracle of cunning workmanship and rich elaboration. Then when the sum of all these is complete conceive, if you may, a shrine more perfect, more sumptuous or more glorious. But the Romance of History has hallowed the beautiful building with memories ; for hither the body of the saint who has given his name to the church was carried by the Venetians from its resting-place at Alexandria, which had been ravaged by the ruler of that Province. The first church of St. Mark was destroyed in 976, together with the bones of the saint, and the building of the present church was immediately commenced on the former site. The new San Marco was consecrated in 1085. From that time forward it would seem that each doge has left some record of his dogeship by addition to the decoration of the church ; for instance, in the atrium are the tombs of three doges and a dogaressa ; to the right of the entrance is the Zeno Chapel, containing his great bronze tomb. In the baptistery the altar is formed of a huge granite stone whereon Our Lord is supposed to have rested and which was brought from Tyre by Domenico Michiel. Here also is the magnificent tomb of Doge Andrea Dandolo, the historian. Before the High Altar are the candelabra

Photo by] *[The Photochrom Co. Ltd.*

THE PIAZZA OF ST. MARK'S, VENICE.

In this square the Venetians assemble chiefly in the evenings, and the scene is a very gay and varied one. In the background of the picture is St. Mark's, with the Doge's Palace on the right, and nearer the spectator the Campanile, which fell down in 1902, but is now rapidly approaching complete restoration.

THE RIALTO, VENICE.

The most popular business centre in Venice. Shylock, the Jew, had his shop upon this bridge, although a covered structure of 1691 has replaced the bridge of Shakespeare's day.

given by Doge Cristoforo Moro, and, chief of the church's treasures, there is the altar front of solid gold—the glorious Pala d' Oro, on which many doges expended both their interest and their riches. The decoration of the church does not, however, rest upon these gifts alone. There is the rich Byzantine screen dividing the choir from the nave, which is surmounted by marble statues executed by Jacobello and Pietro Paolo delle Massegne ; in the choir are some bronze reliefs by Sansovino, who also worked the magnificent door of the sacristy. The three west doors are of bronze, with inlaid figures in silver, the central one alone being divided up into forty-eight compartments. Finally there is the treasury, a wonderful store-house of rare and costly ornaments ; these include the reliquary containing a portion of the true cross of the Empress Irene, two candelabra ascribed to Benevenuto Cellini, a golden rose presented by Pope Gregory to a dogaressa, besides a profusion of vases in onyx and alabaster, one even of turquoise, and many beautiful specimens of enamel work.

One of the most striking ornaments of the church is its wonderful pavement, which consists of inlaid marbles after the fashion of marqueterie work and is termed " vermicolato." It is a work of supreme skill and beauty, the designs of a richness of hue and pattern that is unsurpassed anywhere. and just as the life of the state was in Venice blended inseparably with the life of the church, so the civil events and allegories referring to the civil relations of the Republic are introduced into the patterns.

Venice is famous for its waterways, canals forming the principal thoroughfares throughout the city. The chief of these is the Grand Canal, the Corso of Venice, always thronged with gondolas, and now, through the agency of the tourist, with steam launches, which, however, the artistic eye must learn to overlook. in order that the full beauty of the scene may be appreciated.

There are one or two more notable spots to glance at ere we leave Venice. There is the Piazza of San Marco. the centre of the business and amusement of the town. Its chief ornament is the Campanile, which was begun in 902, but stood unfinished for six hundred years, until, in 1510, the beautiful little loggia of the belfry and the lofty pyramidal roof were built by Maestro Buono, to

[By the Photochrom Co., Ltd.

[By the Photochrom Co., Ltd.

POMPEII.

These two views are characteristic of the town of Pompeii as it appears to-day. The upper is of one of the principal streets, showing the fountain and the chariot ruts worn in the tufa roadway. The lower is of the interior of the house of the Tragic Poet.

complete the building. Unhappily, this beautiful tower fell to the ground in 1902, but under the careful supervision of the Italian Government, the old material is being pieced together, and shortly Venice will again be able to boast of her Campanile. But who would mention the Piazza or the Campanile without a reference to the pigeons of St. Mark's? The most beautiful, the boldest and the most worshipped of any feathered folk. The originators of the stock are supposed to have carried the messages of the "blind old Dandolo" when he was engaged in the assault of Constantinople to the people of Venice; to-day the descendants trade on their ancestral fame and the affections of the populace.

With waterways instead of streets, Venice must rely upon her bridges for a means of sure communication between the many districts of the city. Nor is there any lack of them, although two only are known to fame. These are the Rialto and the Bridge of Sighs. The first is perhaps the finest, though by no means an old bridge. Built in 1691 during the dogeship of Pasquale Cigogna, it replaced the old drawbridge which was chosen by Shakespeare as the scene of Shylock's shop, on account of its renown as the mart of the world. Shops still occupy the present bridge, ranged on either slope and separated in the middle by an arch. There are three passages across the bridge; that in the centre between the shops and one on either side skirted by the marble balustrade. Of the other bridge—the Bridge of Sighs—little need be here said. It is the "pathetic swindle" which has evoked the unnecessary emotions of sentimentalists. It was built by the same architect who designed the prisons and the Rialto Bridge and is of much too late a date to have been crossed by any of the unfortunate political *condamnés* of Venetian History. Ruskin, in his "Stones of Venice," has written:

"No prisoner whose name is worth remembering or who deserved sympathy ever crossed the Bridge of Sighs, which is the centre of the Byronic ideal

THE BRIDGE OF SIGHS.

It is unfortunate for romance that this bridge was built long after the imprisonment of political prisoners had been abandoned. It is nevertheless a good piece of late Renaissance architecture.

of Venice ; no great merchant of Venice ever saw that Rialto under which the traveller now pauses with breathless interest. . . ." But we need not mourn over the hard realism of Truth. Venice is sufficiently lovely without the glamour of tawdry romance ; she is a queen of cities enthroned on the sea, crowned with palaces and adorned with the pearls of price bestowed upon her by her noblest sons. But—it is whispered—her glory is passing. Alas ! alas ! if it must be that we shall lament over her vanished glory ; but let us hope still, and comfort ourselves with the thought that :

" A thing of beauty is a joy for ever.
Its loveliness increases : it shall never
Fade into nothingness."

Pompeii is a city of the dead ; but it is, nevertheless, a city alive with interest, for here the destroyer has become the preserver, and the ashes which fell in fiery showers upon the doomed

POMPEII.

A general view of Pompeii as it lies under the shadow of its destroyer, Vesuvius.

citizens have dealt tenderly with their habitations, their lares and penates, sheltering these from the destroying force of time until the labours of the excavator should rescue them from oblivion. But the fact that he is in a city of the dead soon impresses itself on the wanderer in Pompeii. The dull monotony of silence is upon everything. The sun appears cruel and inquisitive as it shows up the ugly cracks in the masonry of the houses and slants through the gaping doorways. Even the tufa pavements sound hollow to the tread, and save for a few weeds and lichen growths springing up amongst the stones and brickwork, and here and there a restored villa garden, the eye can rest on no oasis of foliage throughout this great desert of grey walls. But once things were different in Pompeii. In the time of Nero it was the fashionable resort of the well-to-do Roman merchant. Here the delightful warmth and the luxury of sea bathing attracted fashionable crowds, so that the city prospered as its renown was spread abroad, and wealthy men erected villas ; men of leisure lived here in retirement ; while some, like Phædrus (known to posterity by his " Fables"), chose the city as a place of refuge from the personal eye of the Emperor. It must not be supposed, however, that the spot was unknown to Rome's emperors. Claudius had a country house in the

Photo by] [*The Photochrom Co, Ltd.*

THE FORUM, POMPEII.

The Forum was the public meeting-place of the town. It was adorned with temples such as that of Jupiter seen in the background to the right of the path, and that of Apollo in the foreground to the left. To the right are the bases probably of equestrian statues, which afford good examples of the "opus reticulatum" brickwork of the Romans.

neighbourhood, and it was here that Augustus paid a visit to Cicero in his beautiful villa. As a consequence, the beauties of Pompeii were sung by the poets of the time, but men of great repute also have testified to its renowned loveliness. Seneca relates that it was famed amongst the Romans for "its roses, its wines and its pleasures."

The patronage of the wealthier class brought with it the necessary accompaniments of public buildings for religious and secular entertainments; shops for the sale of goods and the usual crowd of menials. Bakeries, laundries, wine booths, smithies and potteries are all to be found; while the expensive shops which surrounded the Forum were possibly rented by jewellers, money-changers, and the most prosperous tradesmen of the town. Theatres there are, too, one large and one much smaller, which was roofed, a method of protection from the weather not common amongst the Romans with regard to their places of amusement; further, at a little distance from the present limits of the excavated town is the amphitheatre. It is not unreasonable to find Pompeii so well equipped for the purposes of public entertainment; for it must be remembered that the Romans were a pleasure-loving race, and here were those who had both leisure and money to spend upon gladiatorial shows and the less sanguinary pleasures of comedy and tragedy. But it was the former class of show which delighted the people, and much money was lavished upon the training of the men. The barracks of the gladiators in this city are large and well built, with a large plot of grass in the centre of the square, round which rise the stucco columns of the portico, painted a third of the way up in red and supporting the roof which afforded protection to the numerous apartments of the building—mess-room, guard-house, kitchen, stables, oil-mill. The amphitheatre was large, holding as many as twenty thousand persons, and what is of particular interest as proof of the taste of these people, it was built and in use long before the Colosseum was finished at Rome; but the interest in these gladiatorial shows sometimes over-stepped the bounds of decorum, and one *fracas* which arose during one of these shows provoked the just displeasure of Nero, and resulted in the prohibition of such entertainments in Pompeii for a period of ten years. This accounts for the paucity of gladiatorial impedimenta found during excavations and for the lack of the usual apparatus of these shows which is generally discovered beneath the stage of an

Photo by] [*J. W. McLellan.*

A WINE-SHOP IN POMPEII.

Notice the "bar" inlaid with various marbles.

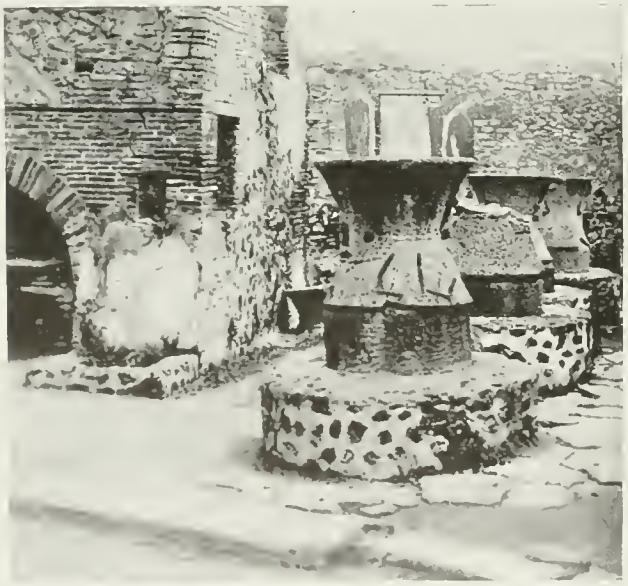

Photo by] [*J. W. McLellan.*

A BAKER'S SHOP, POMPEII.

To the left is the oven, and in the centre are the grinding mills, which in places have been rivetted by some Pompeian craftsman.

amphitheatre. It was in A.D. 63 that Pompeii received the first intimation of the volcanic disturbances which were to work out her doom. A terrible earthquake shook the city to its foundations, and, as we learn from Tacitus, destroyed the greater part of the buildings. The destruction was made greater in the succeeding year by a still more violent earthquake; and although repairs were immediately commenced and gradually a new city was builded from the ancient débris, Pompeii was still unfinished and the Forum still encumbered with a mass of building material intended for the completion of repairs when the eruption of Vesuvius on November 23rd, A.D. 79, sealed for ever its doom, and the succeeding overflow of lava, combined with the ashes which entirely enveloped the ruins, prevented any hope of reconstructing this city of villas and roses and wine.

Photo by] [*J. W. McLellan.*

THE TEMPLE OF APOLLO.

This large temple is of Greek origin. It has been identified as consecrated to Apollo by the Comphalos, or conical stone, erected in the forecourt of the temple. Around the temple were ranged statues of other gods and goddesses.

The best description of the disastrous eruption is to be obtained from the famous letters of Pliny the younger, written to Tacitus to inform him of the death of his uncle, Pliny "the naturalist." The writer was himself an eye-witness of the disaster, and his forcible language produces so fine a word-picture that a few passages from the second letter would not be out of place here: "It was then the first hour, but the light was still faint and sickly. All the surrounding buildings were shaken. . . . The sea was ebbing out, apparently driven back by the shock of the earthquake; at any rate, the shore was much extended, and a great number of marine animals were left high and dry on the beach. We could now see a black lowering cloud, torn by a blast of fire that furrowed it with rapid zigzag lines, and as it opened it disclosed long trails of fire, like forked lightning, only much larger. Soon afterwards the cloud came down and covered the sea . . . and a shower of ashes began to drop (only a scanty shower as yet); then darkness fell over all. At last the

darkness dispersed into a mist or smoke ; soon the daylight appeared, and then the sun, which looked livid and darkened by an eclipse. Everything was changed as we looked out on the world with dimmed eyes. The ashes had covered all things as with a carpet of snow."*

The scanty number of skeletons which have been found during excavations proves that most of the inhabitants succeeded in escaping, and there are evidences that the citizens revisited the site and carried away quantities of property and valuables which it was possible to dig out of the accumulations of ash ; but much was past hope of reclamation, for warm showers fell after the eruption and converted the fine ash into volcanic mud which completely prevented any recovery of the objects underneath. More than this, it worked its way by its own weight into cracks and crevices, and, as it hardened, formed a mould of the object encased, and by this medium many important discoveries have been made which help us to piece together the information derived

Photo by] [*E. G. Wood.*

THE AMPHITHEATRE, POMPEII.

The majority of Pompeians were a leisured and pleasure-loving class. They therefore kept a school of gladiators for their amusement. On one occasion a dispute arose in this amphitheatre, when so many were killed that Nero forbade the continuance of gladiatorial shows in the city.

from earlier researches, and obtain a fairly exact picture of Pompeian life. The moulds of bodies have been preserved in this way, so that we can see for ourselves how the unhappy victims of the catastrophe met their deaths. We can see them lying on their faces, their heads pressed close to the ground, so that they may perhaps escape suffocation in the dense and heated atmosphere. All the woodwork, also, of the houses first collapsed under the weight of ashes and afterwards rotted away, so that nothing would have been known with regard to doors and the other wooden portions of Roman architecture, had it not been for the impress of these ash moulds. As it is, we can reconstruct with a certain amount of accuracy. This has been done in the case of the House of the Vettii, one of the finest villas in the whole of Pompeii, which was also one of the best preserved, so that only the woodwork for the roof and the replacement of the tiles (which are made after the ancient pattern) have been necessitated to enable the visitor to gain a correct impression of the peristyle of a Roman house. The garden has been laid out in accordance with information gathered from the frescoes found here. But before going

* "Pompeii," by Pierre Gusman.

THE VIA DELLA FORTUNA, POMPEII.

This photograph affords an excellent idea of a street in Pompeii. It is of one of the leading thoroughfares of more than ordinary width. Notice the much worn stepping-stones in the foreground of the roadway and the fountain with the ornamental fountain-head.

further, it is advisable to gain a correct idea of the construction of a villa. Whether it be insignificant or so elaborate and palatial as the House of the Faun, the main features are the same. The primitive dwelling of the Latin race was a simple structure, with a wide doorway to let in light and a hole in the roof to let out the smoke. This was the atrium. Towards the centre of the space was the hearth and the water-jar, and on the side opposite the door was the bed of the primitive owners. Gradually improvements were introduced. It was necessary to provide for the entry of the rain, so the oblong opening in the roof was matched by an oblong tank in the floor; these were the compluvium above and the impluvium below. The water-jar remained where it was first placed, but the hearth itself was removed to one side, as was also the table for meals. Then the wall opposite the chief entrance was broken down; to the right and left wings were added to the building, which served as bedrooms. The atrium now led out into the tablium—the place reserved for meals. This looked on to the garden, which was soon surrounded on its four sides with a covered colonnade, pillars supporting the roof flanking the open space for flowers. This was the peristyle. After a time the walls that bounded the outer side of the colonnade were developed into recesses and became, first, bedrooms, and later were transformed into occasional rooms, such as library, dining-room, while on the side opposite the principal entrance a large room was arranged as a saloon. At the back of this room was the vegetable garden. Some of the later-built houses had a second story built around the peristyle, with a double colonnade and crazy stairs leading at one side to these rooms, always bedrooms. If, as in the case of the House of the Faun, the building required more rooms than the ordinary villa could supply, a second series of rooms was arranged to supplement the first. This system of building was suitable to the exigencies of Pompeian days. Roads were too narrow, too choked up with passers-by and waggons, and often with refuse and

Photo by] [*J. W. McLellan.*

THE HOUSE OF THE VETTII, POMPEII.

This villa has been named from some signet rings of freedmen, found in the peristyle. The photograph shows the atrium, with the compluvium or open space in the roof and the impluvium in the floor to receive the overflow from the roof above.

Photo by] [*J. W. McLellan.*

THE HOUSE OF THE VETTII, POMPEII.

The peristyle of the house as it has been restored, with the surrounding portico. Even the plants growing here have been chosen because they are known to have been cultivated in Pompeian gardens.

drainage, to make an outlook on to them desirable. All interest was, therefore, centred in the interior of a villa. Cold weather was seldom experienced, so that the architect had little need to bother about artificial warmth for the rooms. This, if necessary, was supplied in charcoal braziers. The great necessity was shadow from the heat of the sun, but withal light and air, and the style of the Pompeian building adequately fulfilled this purpose. But there was one point in which the Pompeians excelled their mother city of Rome: this was in the decoration of the interiors of their houses. Again the House of the Vettii affords us the best means of judging the scheme. Every room is lavishly ornamented; one, which was perhaps the library, is panelled in black with a light and fantastic ornament, of medallions, chains, strings of beadwork, brought up in multi-coloured relief against the black groundwork. The large room to the right of the peristyle is decorated with panels of the famous Pompeian red, bordered with black and inset with panels painted with graceful figures. It is necessary to see these decorations to realize the brilliant colourings which adorned what must have been a gaily-painted town. For painting is to be found everywhere, even on the pillars of the Temple of Isis.

One word with regard to this beautiful little Temple of Isis. Here is a most convincing truth of the readiness of the Roman to include the gods of foreign countries in his mythology. The worship of Isis during the later days of Rome was a fashionable cult, and the popularity of that worship in Pompeii is sufficiently clear. Everywhere are to be found references to the Egyptian divinity, even little altars are to be found in private houses, placed there to receive the offerings of the household. But the best preserved temple in Pompeii is that of Apollo, which belongs to the first period of architecture and is built in the form of an oblong, surrounded with a colonnade of two stages. At the upper end of this space is the temple proper (the cella), standing upon a high base, or podium, which is approached by a flight of steps, before

which stands an altar of sacrifice. The columns supporting the portico are Ionic, which later were covered over with stucco to imitate Corinthian pillars, but this addition has fallen off and the original order is displayed. Six statues of other deities occupied positions in this court, one of the most beautiful being Aphrodite. The floor of the cella was of black, white and green mosaic with a border-line of red and white marbles. Nor is the worship of Apollo confined to the temple dedicated to his honour. In his various attributes, such as the sea-god, the god of harmony, the giver of oracles, he is to be found commemorated in private shrines and frescoes. But he is unmistakably the Grecian Apollo and his worship must have been introduced by the Greek colony into Pompeii. In this way we can have complete evidence of the assimilation of foreign ideas by the Pompeians; we have seen the cult of the Egyptian religion, and here we have that of Greece.

Let us now turn to the everyday life of the city, and first examine the streets. Narrow they

THE HOUSE OF THE ÆDILE, POMPEII.

This is one of the largest in the city, and was rebuilt after the destructive earthquake of A.D. 63. The lower parts of the debased Ionic pillars are covered with the famous Pompeian stucco of a deep red colour, while the upper are ornamented with irregular flutings.

certainly are, but they are well paved; while facilities for crossing the road have been remembered in the placing of stepping-stones, usually three, level with the curb, across certain parts of the road. These stones are so arranged that they do not interfere with the passage of the wheels of the waggons through the street. How great the wear and tear as made by the traffic may be judged by the deep ruts across the tufa paving-stones and on either side of the stepping-stones. At the corners of the principal streets, such as the Street of the Fountain, were stone tanks with a carved standard for the inclusion of the water tap. How great a necessity they were to the citizens is evidenced by the polished groove made in the margin of the tank where the left hand rested as the thirsty stooped down to drink the water. The water supply was carried into the town by an aqueduct from Nola, and any surplus water flowing into the tank from the spouting tap was carried by an overflow pipe into the street, which was drained away into the sewers outside the city. That the streets were often thronged and sometimes noisy is made clear by the notices affixed by owners to the outer walls of their houses. There is one forbidding the congregation of noisy

THE STREET OF TOMBS, POMPEII.

The ashes of many of the most distinguished Pompeians are buried along this high road leading out of the Gate of Herculaneum. The foremost two "cippi" on the right of the picture are those of Calventius Quietus and Tyche.

Photo by] [*The Photochrom Co. Ltd.*

FINGAL'S CAVE.

This famous cave on the shores of the small island of Staffa, off the west coast of Scotland, is composed of the same strange rock pillars which are to be found in the Giant's Causeway.

youths at the corner of a road leading into the Vicolo di Mercurio. Of the shops, bakehouses and taverns are the most common, as the arrangements for cooking, even in the most elaborately-furnished houses, were so slight that the sale of ready-cooked foods, and more especially loaves, was no inconsiderable form of trade. The wine shop was the public place of resort. They were more elaborate than most of the Pompeian shops, and from a fresco and the satires of Martial we can picture the crowded bar with the customers seated on stools round the table, some perhaps, playing dice; Greek wine was especially favoured by the elegant man of Pompeii.

The life of the city was that of a pleasure-loving community, and the following quotation from Mr. W. M. Mackenzie's book on these ruins reproduces the scene with admirable realism. "Waggons and carts, with loosely attached mules or horses, clanked and bumped over the worn pavement and down the deep ruts; street merchants proffered and appraised their bric-à-brac or fruits and flowers; porters and pack-mules with jingling bells threaded their way through the traffic, turning off here and there to their destinations; citizens hurried and jostled along the narrow sidewalks, eager and vivacious, past gaily-panelled wall-spaces or gaping shop-fronts where the goods plucked at their sleeves. Puffs of steam from the cook-shops and the odours of their food crossed the less pleasant exhalations from the garbage and wash in the gutters. Interested persons would stop to read on a public *album* the latest political appeal or public advertisement of shops or houses to let or of articles stolen; others bent at some corner to draw or drink from the splashing jet of a fountain; or dodged for the stepping-stones or swallowed a hot or cold refresher at an open bar, or cast the hood over the head and dived into some noisy tavern to consort with dubious company at wine or dice. . . . Night descends quickly in the south, bringing a glaring moon or stars with the sparkle of gems upon velvet; the shops are shuttered, the houses close as a prison, the streets in shadow or utter gloom; the nervous passenger lights his way by a wavering taper or a horn-framed lantern, or, if rich, by the links of his slaves. . . . the noise of the day returns in boisterous and erratic gusts and the early-to-bed Pompeian, like Macerior, turns on his unquiet pallet and vows that in the morning he will inscribe on the nearest *album* a personal request to the ædile to put some restraint upon these murderers of his sleep."

There is one part of the city where the bustle and noise gave place to a calm, but there

was nothing gloomy in the stillness, for melancholy had no part in the Latin mind, least of all in the Pompeian; so that the Street of Tombs was far from a wilderness of dead men's bones. The usual form of the tomb was the *cippus* such as is shown in the illustration of the Street of Tombs, which recorded the site of the buried urn. A tiled channel connected the urn with an aperture closed by a stone and covered to a little depth with earth, so that when libations were offered to the deceased the wine or oil would flow directly upon the urn.

The Street of Tombs, although to this city what the Appian Way is to Rome, is not the only street outside the walls which is devoted to the memory of the dead. The streets leading out of the Gates of Stabia, Nuceria or Nola all have tombs, but the road that led to Herculaneum was the most important of them all in this respect.

Fingal's Cave.—The Island of Staffa, lying off the coast of Argyll, is famous for Fingal's Cave, a marvellous geological formation akin and certainly connected with the Giant's Causeway of Ireland. Each side of the entrance is flanked by columns or pillars supporting an arch. It is these pillars, reminding us of the basaltic rock formations of the Giant's Causeway, that have given the island its name, for Staffa is the Scandinavian equivalent for "pillar." They are sixty-six feet high and forty-two feet apart, and are as perfectly shaped as though the hand of man and not the action of the water had chiselled and rounded them. The length of the cave proper is two hundred and twenty-seven feet, and its floor is formed by the water which enters from the sea and throws up "flashing and many-coloured lights against pendent columns," against the white calcareous stalagmites which form the roof, and against the pillared walls of this weird cave. The lapping of the sea against the base of the cliffs reverberates and re-echoes with a musical intonation, swelling to a thunderous roar during a storm or tempest.

Aareschlucht. — The Rhine, the Rhone and the Aare are the three most important rivers of Switzerland, and all three, flowing in different directions, have their source within a few miles of each other, in the very heart of the Alps, where the Furka and the Grimsel are almost neighbours. The Rhine flows to the east, then north to where it swells out into the Lake of Constance, followed by a westerly course down the falls at Schaffhausen to Basle, where it aban-

Photo by [*H. C. White Co.*

THE AARESCHLUCHT.

A mile to the south of Meiningen is this wonderful gorge, where the Aare, swollen by the melted glacier snows, has forced a passage through the wooded hill called the Kirchet.

dons Helvetia. The Rhone, on the other hand, flows westwards to the Lake of Geneva, and, on entering French territory, hurries south to the Mediterranean. The Aare, a lesser stream, has a double honour : that of watering the valleys of the Bernese Oberland, forming on its way the lakes of Thun and Brienz, and that of encircling the old capital of Switzerland before joining the Rhine. Its career is short and violent, the more violent the nearer its source. As, æons ago, its turbulent waters rushed down the Haslital, they encountered a serious obstacle in the shape of a wooded hill called the Kirchet, and with impetuous wrath they set about gnawing a passage through the living rock—narrow, savage, perpetually spray-dashed. Having succeeded, they swept merrily onward, past Meiningen and cosmopolitan Interlaken, to the city whose emblem is a brown bear.

The gorge of the Aare, about a mile to the south of Meiningen, is, with the cascades of Reichenbach, one of the attractions of this region—alas, too soon to be vilified by cables and rails for an electric train. As it is, the steps, tunnels, galleries and iron railings which enable the tourist to follow the course of the river from one end of the gorge to the other have already taken away much of the wild spirit of the place ; but they were a necessary evil, as otherwise it would have been impossible to penetrate into the chasm of seething and boiling water, so tumultuous as to throw the spray in clouds of water to the right and to the left in its journey of a mile through the Kirchet.

MOUNT VESUVIUS.

A photograph of a slight eruption, showing the particles of lava and volcanic ash suspended in the clouds of vapour.

Vesuvius.—To the east of Naples is the mountain of Vesuvius. It stands out sharply from the horizon, the most prominent landmark to the dweller in the city, over which it appears to preside, like some vengeful fate, waiting patiently for the appointed time when it shall pour out its vials of wrath and overwhelm the numberless white villas crowded on the rocky slopes from the shore of the bay to Mount St. Elmo.

It is the bulk of the mountain which makes it appear in such close proximity, for in reality it is about six and a half miles away from the town. Nevertheless, the distance is not too great to do away with the possibility of danger from an eruption, especially as the whole area on which the town rests is known to be extremely volcanic. In times past the danger zone has reached very near. There have flowed from the mountain streams of lava, which, if their course had been in the direction of Naples, would have reached not far short of the city's borders ; and there is always a certain risk from the showers of red-hot ashes and scoriæ which accompany an eruption.

It is supposed that the present mountain, rising from the Campanian plain, is only the core, or the inner cone, of a much more ancient volcano, which had an immense girth and of which Monte Somma, a little to the north-west of Vesuvius and separated from the mountain by the Atrio del Cavallo, is the only remaining portion. If this curved height were continued round the whole belt of Mount Vesuvius it would form the circumference of the ancient height, while the

Photo by] *[H. C. White Co.*

NAPLES.

A view of Naples with Vesuvius in the distance, dominating the eastern extremity of the beautiful bay. Notice the smoky cloud which shadows the peak and is caused by the vapour from the living volcano.

Photo by permission of] [*S. E. Whiting.*

A LAVA FLOW, MOUNT VESUVIUS.

The pressure brought to bear on the cooled lava by the ever-increasing stream flowing hot from the crater piles it up into broken masses as seen in this photograph. The darkness and misty effect is caused by the falling of fine volcanic ash.

valley of the Atrio del Cavallo, which to-day is sickle-shaped, would be continued to form an immense crater, shelving downwards to an immense orifice where the cone of the present Vesuvius now rises. Based upon this supposition, it follows that at one time, long before the history of man, a terrific eruption must have occurred which in all probability caused the collapse of the original height of the first mountain, and that, as time passed away, a succession of smaller eruptions threw up the material which gradually went to form a smaller mountain and a new cone. Then followed a long period of quiescence, which continued till far into historic times and gave rise to the belief that the volcanic qualities of the mountain were dead or dying. The first person to consider seriously the origin of the volcano is Strabo, who lived at the time of the Emperor Augustus (circa B.C. 70 to circa A.D. 24), and who, in his valuable Miscellany, declares Vesuvius to have come into being by the agency of eruptions. Nevertheless, in his time, and until many years later, the sides of the mountain were covered in prolific vineyards, which gave rise to a flourishing wine industry, though this product was rather famous for quantity than quality. It was in A.D. 79 that the people inhabiting this district were to receive a rude awakening from their imagined security; although repeated warnings of the danger that threatened had been given from as far back as A.D. 63, when the locality had been shaken to its very foundations, and earthquakes had, on several occasions following, confirmed the premonitions of the first. Nevertheless, the country was unprepared for the first known eruption, which was one of appalling violence. Pliny, in his letters to Tacitus, as has been mentioned in the article on Pompeii, has left a most realistic record of the event, but perhaps his description of the appearance of the smoking cone is of the most interest to us.

"On the 24th of August, almost at the seventh hour, my mother showed him (the elder Pliny)

a cloud, of an unwonted shape and size. From a distance it was difficult for the spectators to be sure of the mountain from which it was rising (it has since been ascertained to have been the one known as Vesuvius), while in shape it was not at all unlike a mighty tree; especially resembling a pine, for it had an immensely tall trunk which, when it reached a great height, divided into many branches. I believe that it was driven up by an expelling blast which, as it died away, left the cloud unsupported, or else the formation, destroyed by its own weight, melted away and was dispersed broadcast. Sometimes the cloud was white, sometimes murky and spotty, on account of the earth and ashes with which it was charged."

Many times since, this strange appearance of a pine has been noticed during the eruptions. It is caused by the minute particles of ash which are held suspended in the vapour ejected with much violence from the orifice in the mountain. When the impelling force of its projection is diminished and the mass meets the heavier pressure of the cool air, it disperses far and wide, covering everything for many miles with a dense coating of ash. In the eruptions of A.D. 472 and 1906 this ash is recorded as having fallen even in Constantinople. There is another phenomenon usually to be seen during such an outburst. Flame appears to belch forth from the summit of the burning mountain. This has been explained as sometimes due to the electricity, which is often discharged with great violence, and at other times to be nothing more than the reflection of the incandescent mass seething in the depths of the crater upon the vapour which hangs over the volcano.

Not only is ash and vapour ejected, but larger masses of molten substances; of these the largest are known as "Bombs" and the smaller as "Scoriæ." They are often composed of mineral substances mixed with the lava, and are sometimes full of crystals produced by the great heat to which the matter has been subjected. But most dreaded of all the effects of an eruption are the

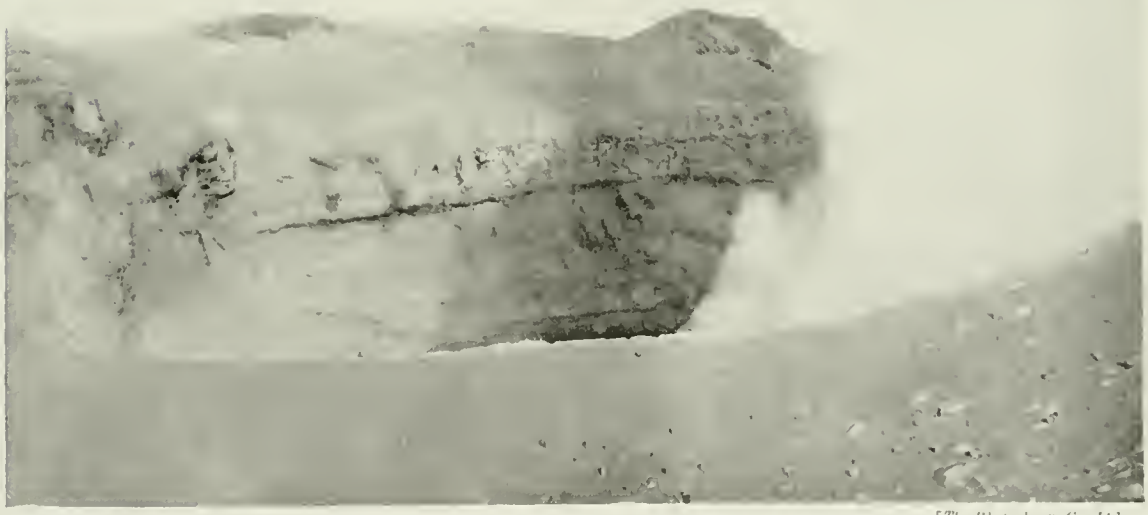

Photo by] [*The Photochrom Co. Ltd.*

THE CRATER, MOUNT VESUVIUS.

A fine view of the "Jaws of Death." The slope from the crater's edge is composed of fine shifting ash, which slips away at every footstep and affords very insecure foothold.

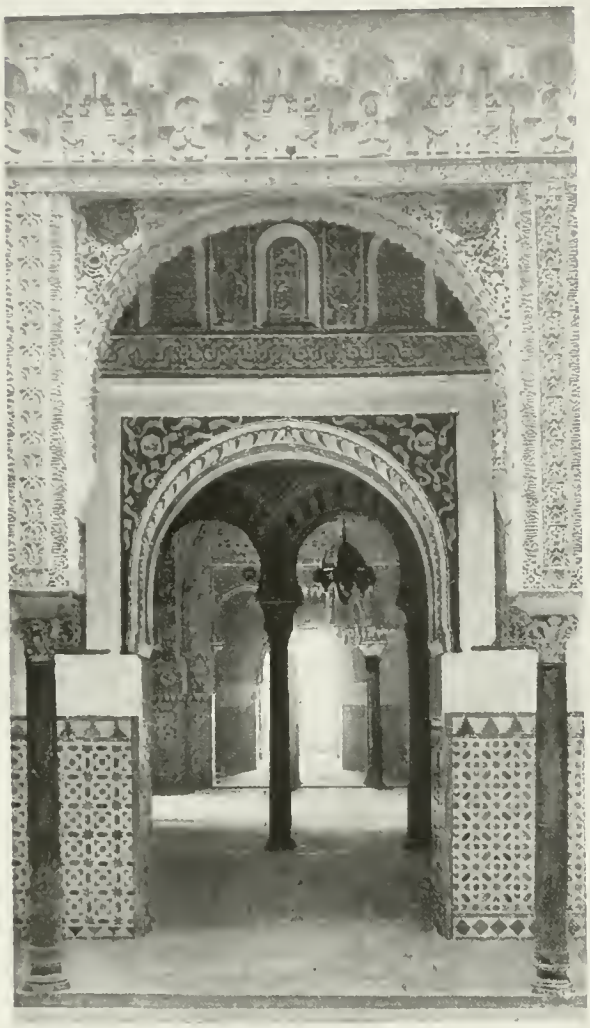

Photo by] *[The Photochrom Co Ltd.*

ALCAZAR, SEVILLE.

The Courtyard of the Maidens is the largest and finest of the courtyards in the Alcazar at Seville, and is remarkable for the harmonious proportions of its parts. In the arches it will be observed that the creators have abandoned the horseshoe for the circular or slightly ogival type.

lava-streams, which pour in devastating floods from the crater, or, when the pressure is very great, from the vents which appear in the side of the crater. These lava-flows vary greatly in the rate with which they spread over the ground, depending very much upon the virulence of the eruption. In 1872 a stream broke forth from Vesuvius and covered the valley south of the Observatory Hill at an average progress of four miles an hour; but many of the streams do not attain to nearly that rapidity of motion, and all diminish in speed as the lava becomes cool and obstructs the passage of the warmer flood. It is this obstruction which results in the piling up of laval deposits, often to a considerable height, and creates the appearance of folds in the mass of congealed grey stone. The destruction wrought by such outbursts, as may be imagined, is terrible; nothing stops the onward flow till its own force is checked, and the course of a stream is marked by complete desolation. As one travels in the train which runs from Naples to Pompeii the evidences of the damage inflicted by the last great outburst of 1906 are only too plain. At one time the line passes through groves of lemon and orange-trees, which in the spring are laden heavily with fruit. Vineyards, too, cover the ground, and not an inch is passed which does not testify to the amazing fertility of the soil; but suddenly the orchards cease: the deep green of the abundant foliage is replaced by barren rock, piled many feet high. Not a blade of grass, not a twig, not a habitation is visible; all the land is given up to the dull grey-brown of the lava-stream. It is cool now, but it is desolate and barren. Years must pass away before any sign of vegetation can appear. The hard crust must be washed by the rains and must decompose in the atmosphere till it shall become a light black soil. When that state is reached it can be planted again with vines and fruit trees, and abundant will be the reward of the planter, for no soil produces such prolific crops as volcanic; but as it is, a few days have destroyed the labours of many years, and reduced the small owners, who have relied on the produce of the land for their livelihood, to penury. The courses of the streams are clearly defined, for the vegetation hugs the very borders of the lava flow.

CHAPTER XXIII.

By CHARLES RUDY.

Alcazar, Seville.—The Moorish occupation of Spain affected the national character of the Spaniards in more ways than is generally admitted. In art, this influence would have predominated even after the fall of Granada, had not the Italian Renaissance—as far as Spain herself is concerned a purely spurious and unsympathetic movement—swamped the country and practically killed the nascent home art. This latter was a combination of Oriental and Christian arts, but original enough to deserve a name of its own, Mudéjar, from *mudejares*, the Moslems living under Christian domination. During the years of the reconquest of Spain from the hands of the Moors, this peculiar art blossomed out, leaving here a perfect specimen of mural decoration (Sahagún), there an ornate chapel (Cathedral of Toledo), until it attained an unequalled degree of excellence in the Alcazar of Seville, the construction of which dates through many centuries, and which is now used as one of the palaces of the royal family.

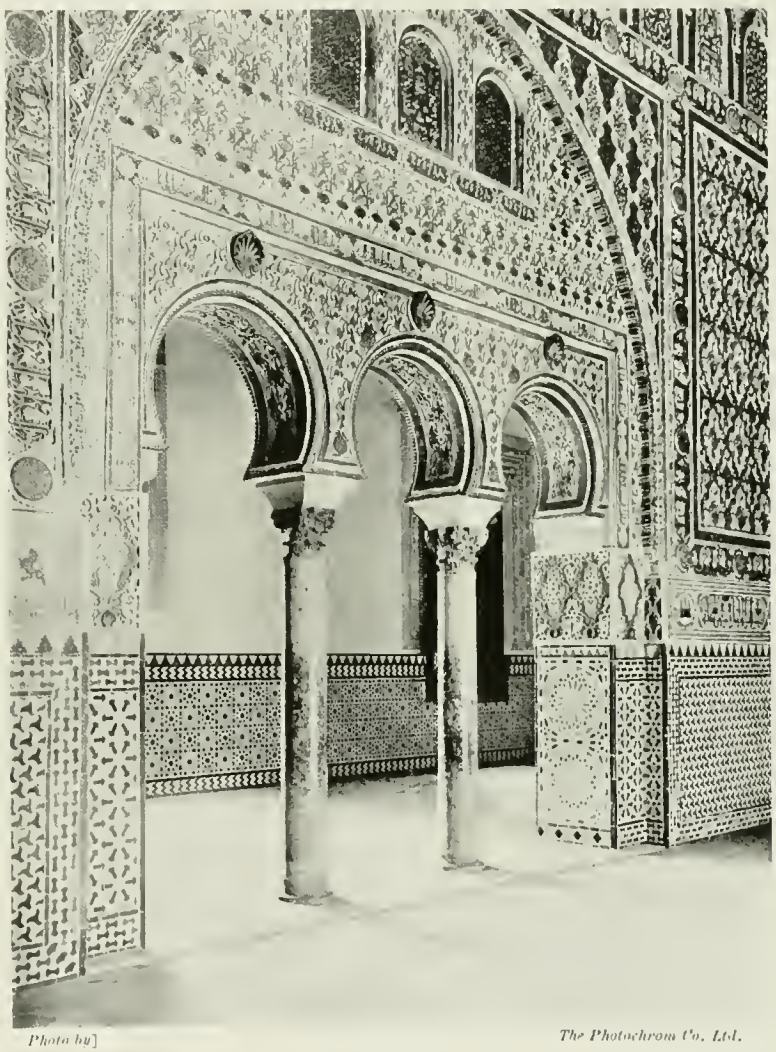

Photo by] The Photochrom Co. Ltd.

ALCAZAR, SEVILLE.

A view of one of the arched doorways from the Hall of the Ambassadors into the adjoining corridor.

Peter the Cruel, the first of the Christian sovereigns to remove his capital to Seville, began the palace on the site of a Roman prætorium and of a Moorish citadel—whence the name alcazar, which signifies castle. The king was at this time still madly in love with his beautiful mistress, Maria de Padilla, and it was to please her that he planted the beautiful grounds on the bank of the Guadalquivir with orange-trees and palms. Successive monarchs have enlarged and beautified the garden, until to-day it is the pride of Spain, and contains among other attractions, a maze and *burladores*, or surprise fountains, which take the unwelcome visitor unawares, and give him a cold douche—not unpleasant in Seville on a hot summer's day. In the gardens,

Photo by] *[The Photochrom Co. Ltd.*

ALCAZAR, SEVILLE.

The Hall of the Ambassadors, which was the throne-room of Peter the Cruel, is as gorgeous as its namesake in the Alhambra. It was here that Charles V., the most powerful of Spain's monarchs, was wedded, amidst scenes of unusual splendour and in surroundings that are unique in their genre.

moreover, is to be seen the Padilla's bath, where she used to take her morning dip, and where, as the chronicles tell us, the courtiers gathered after the bath and, in order to gain favour with the ruler and his mistress, drank the bath dry. As a matter of fact, souvenirs of the days of Peter the Cruel abound in the Alcazar: here he murdered his brother Fadrique, and there Abu Said of Granada—the latter for the sake of a ruby which he later gave to the Black Prince and which now belongs to the Crown jewels of England. Beside the door are to be seen the heads of four judges, whom the despot had executed for mal-dispensing justice. The monarch's room is on the second floor of the palace, whereas on the ground floor, adjoining the Hall of Ambassadors, are the Padilla's apartments.

From the street the palace has more the appearance of a mediæval castle than of a fairy dwelling set among orange-trees; but seen from the garden, a totally different impression is obtained. The far-projecting roof of the low building seems to hold up a frieze of drooping stalactites, and these in their turn give birth to a row of ajimez windows, with their double horseshoe arch supported by slender pillars of purest white. In the interior the play of shadow and light, of gold which is sunlight, and of a blue as transparent as are the tones of the south, is intermingled with green, representing foliage. The visitor therefore emerges from the grounds surrounding the palace to enter another garden, equally exquisite and almost as natural. This is characteristic of the art of the Arabs; their interiors are not gloomy, their mosques are not buried in shadow as are our Gothic piles. From narrow, winding, tortuous streets that are filthy and uninteresting, the master enters the forbidding-looking door of his house and finds himself in a flowered *patio*, or courtyard, from whence he penetrates into his apartments, where the flashing colours of a Saharan oasis are brought vividly to his mind, the while the fountain splashes on marble or tessellated tiles with a tingling music all its own. We realize this peculiarity when wandering through the rooms and halls of the lower story of the Alcazar at Seville, and, whilst admiring the rich dome of the Hall of Ambassadors, the splendour of carved and painted ceilings—*artesonados*, they are called—the pillars in the Patio of the

Photo by] [*The Photochrom Co. Ltd.*

ALCAZAR, SEVILLE.

Though less pure in style than the Courtyard of the Maidens, the Courtyard of the Dolls can boast of a running frieze of a new design. This is a welcome change from the usual stalactite motive; on the other hand, the view through the doorway towards the apartments of the Padilla is essentially Oriental.

Maidens, the glazed tiles in the apartments of Charles V., or the quaint figures in the Courtyard of the Dolls, we cannot fail to wonder at the genius which created such a monument, the one and only of its kind, where all is cool and yet all is bathed in sunlight. And if a line is to be drawn between the art of the Arabs, as exemplified by the Alhambra, and the Mudéjar art movement of which the Alcazar is the most perfect type, it will show on the one hand a conventional form—ever-varying in geometrical designs, it is true, but conventional nevertheless—and on the other a somewhat similar conception, but freed from academic axioms based on the Koran, and at liberty to roam, unfettered like the desert wind, according to the personal imagination of the artist-creator. Never has more freedom in art been known than in the palmy days of Mudéjar art, and this very freedom, combined with Charles V.'s inordinate love for everything smacking of Italy and hatred for anything Spanish, must be looked upon as the primary cause of its premature death.

Photo by] [*The Photochrom Co. Ltd.*

MONT ST.-MICHEL.

This island served as one of the principal temple-fortresses of the order of knight-monks which arose in the thirteenth century. Here the Order of St. Michel was founded by Louis XI. in 1469, and the meeting-place of the order was in the splendid Hall of Knights.

Mont St.-Michel.—The Latin countries have abbeys, monasteries and priories galore, and the majority are situated among lovely surroundings, now peacefully hidden among orchards and vineyards, now boldly prominent on some commanding height. Mont Saint-Michel belongs to the latter category, and, if a comparison is to be drawn, it can be mentioned *en passant* that it closely resembles our St. Michael's Mount, off Penzance, in Cornwall. As a matter of fact, the latter was a priory ruled over by its Norman namesake, into whose keeping it came after the Conquest. Perhaps there is more than a mere coincidence in the similarity between both granite isles and in the identity of their names; doubtless some Benedictine monk accompanying the Norman host was reminded of his fortress-abbey off the north-western coast of France when he came to Mount's Bay, and obtained it from William for his order. We know that the Norman abbey came in for a fair share of the Conqueror's spoils, and St. Michael's Mount was most likely one of the minor gifts. When Henry V. deprived alien orders of priories in England, St. Michael's Mount lost the greater part

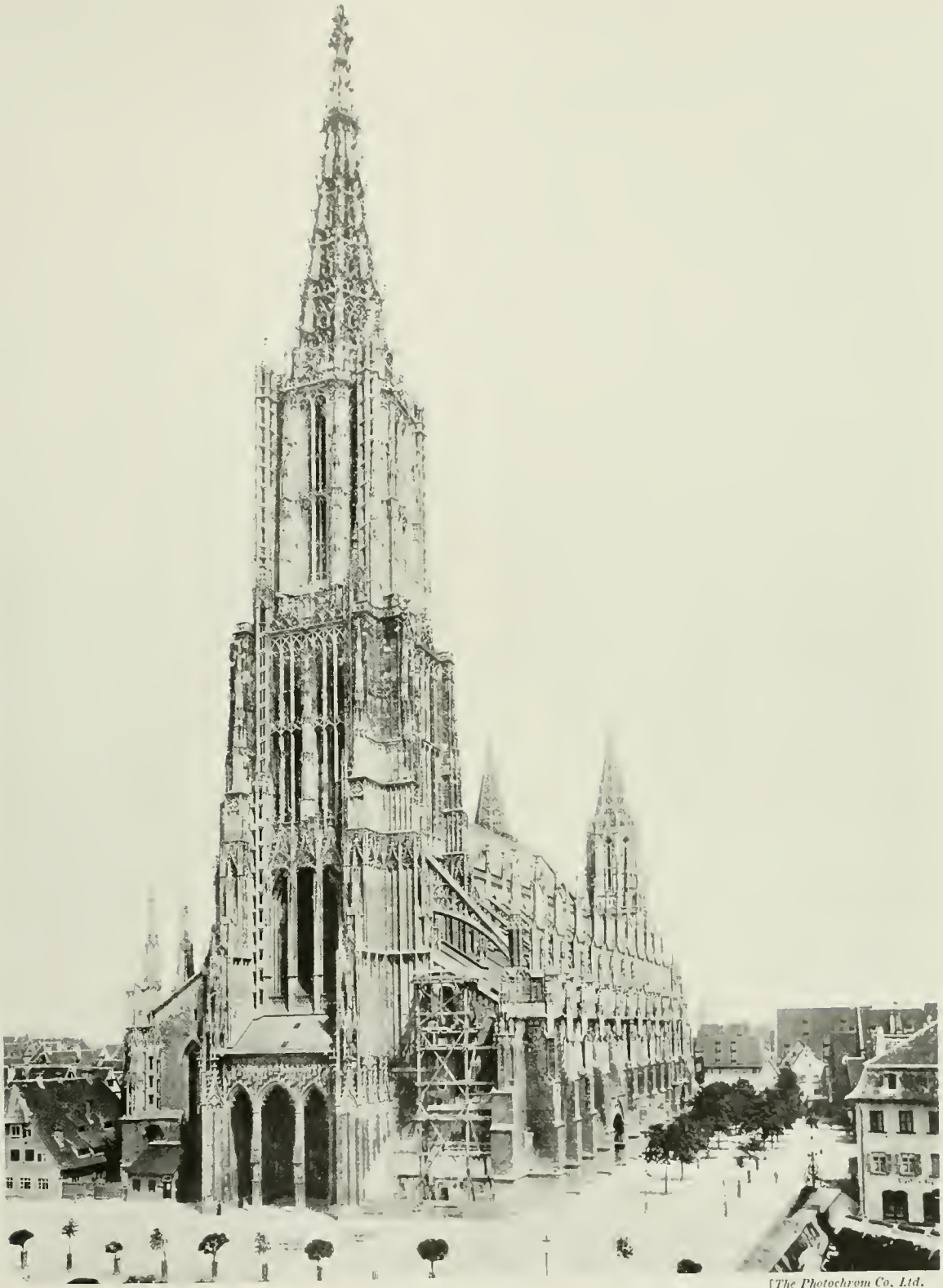

Photo by] *[The Photochrom Co. Ltd.*

ULM CATHEDRAL.

The highest church-tower in the world belongs to this Cathedral; and not only is it notable by its measurements: it is also a magnificent specimen of Gothic architecture.

THE WHITE GROTTO, CAPRI.

These caves are carved by the action of the waves on the limestone rocks of the island. They penetrate far into the heart of the island. The White Grotto is noted for the delicate play of light in the stalactitic formations in the caves.

of its religious significance, greater importance being attached to its castle than to the chapel of St. Michael. The French abbey, on the other hand, grew in power and authority. In 1469 Louis XI. instituted the Order of St. Michel, and it was in the Hall of Knights that the chevaliers came together annually. In the seventeenth and eighteenth centuries, the formidable donjon was used by the monarchs to imprison political delinquents; in the nineteenth the abbey was restored after a fire, and is now the property of the Commission of Historical Monuments.

The island on which stands the abbey is situate six miles to the north of Pontorson in the department of the Manche. It is a towering mass of granite, three thousand feet in circumference at the base, one hundred and sixty-five feet high, and distant one mile from the shore, to which it is joined by a causeway. The fortress-abbey, properly speaking, stands on the steepest part, facing north and west, the slopes on the other sides being covered with houses. A strong wall, machicolated and turreted, and an almost unique specimen of the military architecture of the thirteenth century, surrounds the buildings, and possesses but one gate, through which climbs the only street of which the island can boast. At the upper end of the street stands the portico of the châtelet, which, like the majority of the buildings constituting the abbey, is three stories high. The floor of the church, which crowns the highest point of the island, lies on a level with the third story of the adjoining buildings. The result is an unusual appearance of forbidding and compact strength—an effect that is heightened by the extreme severity of the architecture, which is Norman-Gothic of the purest. The handsomest part of the ensemble is the cloister, with its double rows of pillars supporting pointed arches with delicate floral designs carved in the interstices: whereas the most romantic apartment is the Salle de Chevaliers, where knighthood strutted to the clanking of spurs and the clinking of chain-armour.

Photo by] [*The Photochrom Co. Ltd.*

THE BLUE GROTTO, CAPRI.

Perhaps the best known of all the caves in Capri. The mouth is particularly small, and all light comes into the cave through the blue waters, creating the curious effect of colour which gives the cave its name.

Ulm.—Cathedrals possess a personality like people—one personal touch, as it were, that remains ever uppermost in the memory of those who have visited it. The wealth of Toledo and the grace of Leon, the stone carving at Amiens and the sobriety of Poitiers, the cupola of St. Sophia (it was a cathedral before the muezzin called from the minaret) and the stained windows at Cologne—these are the touches which we remember, and they synthetize our impressions. The cathedral at Ulm, in southern Germany, situate on the northern bank of the Danube, in Würtemberg, is no exception to this rule, and its tower is its personal note—tall, sky-piercing, ever visible, the highest church-tower in the world, measuring from ground to spire five hundred and twenty-eight feet. It is a landmark for miles around; it can be seen from the campanile at Constance, on the lake of the same name, and it can be perceived on a clear day from a greater distance still—from the Säntis, the highest peak in northern Switzerland, on the confines of St. Gallen and Appenzell. Conversely, the view from the tower, along the Danube, over the orchards of southern Germany to

Photo by] [*H. R. Ballance.*

THE NATURAL ARCH, CAPRI.

A splendid example of Nature's architecture to be seen amongst the rugged scenery of Capri.

the Bavarian Alps, and northwards to the hills of Würtemberg, with their royal pleasure-palaces, is truly grand, repaying the wearisome climb up the spiral stairs in the interior of the polygonal tower.

As for the cathedral itself, it ranks second in size in Germany, the cathedral at Cologne being the larger. It was begun in the Early Gothic style in the fourteenth century, but was not completed until the sixteenth. The nineteenth century saw a thorough restoration of the handsome pile, and the introduction of the large organ consisting of one hundred and nine stops and six thousand, six hundred and sixteen pipes—one of the most magnificent organs in the land *par excellence* of organs. Noteworthy also are the choir-stalls, dating from the fifteenth century. They were carved by one Syrlin, and are not to be rivalled in Germany. The carver, like Master Mateo, of Santiago de Campostela fame, wished his features and those of his mother to be perpetuated, and so he carved them on two of the stools, where they are to be seen to this day. Among other figures due to his imagination are sibyls, and the cardinal virtues and vices, the former being represented, as is only too natural, by good Christians, and the latter by bad pagans.

Capri.—As the visitor at Naples looks across the deep blue waters of the bay he will see three islands break up the wide horizon. To the west Procida and Ischia first take the eye, for the last-named is an island of some size ; then directly to the south lies Capri, its picturesque outline dimmed by the blue distance, with a scattered group of white villas nestling between the towering masses of rock. For Capri is formed of two mountains, the highest of which, Mount Solaro, lies to the east, rising abruptly from the sea to a height of nearly two thousand feet. The whole of the island is composed of Apennine limestone, which proves it to have been at one time connected with the mainland, and to have formed part of the peninsula of Sorrento. These rocks form the chief interest of Capri, and their unique beauty is worthy of record among Europe's natural wonders. Perhaps of all the grottos which the sea has carved out at the island's base the Blue Grotto is the most famous. It is difficult of entry, for the opening is hardly three feet high ; but when inside the traveller, after he has become accustomed to the dim light, finds himself in some enchanted cave. Everything around is blue—blues of varying shades and colours, from the soft tint on a pigeon's wing to the richness of deep lapis-lazuli. The limestone rocks above are grey-blue, the caverns which are to be seen at the back of the cave are indigo. But the greatest wonder of all is the sea which fills the grotto. It is no longer sea, but a lake of molten metal, every wave carrying a brilliant reflection, which gives it the appearance of an opaque but liquid flood. At the same time it is a mass of shifting lights with rare and beautiful colourings, which cannot be described. The only comparison

possible is with the sky at sunset, where the deep blue melts into a wonderful green so subtly blended that it is impossible to define each separate colour. Imagine such a sky in a state of unrest, throwing off silver shafts of light, with ripple following ripple into the darkness of the cave. That is the appearance of the waters which fill the grotto. There are some youths bathing in the deeper recesses; one of them plunges in. As soon as he is immersed in the water he is become silver; brilliant, polished silver, every limb. The magic of the cave has fallen upon him and he is no longer human; but a silver merman disporting himself in the fairies' pool.

But we are bewitched. Let us examine the cause of this wonderful transformation scene. It is brought about by the light which filters in through an opening far underneath the waters of the Mediterranean. This tinges the light with their colour as it makes its way upwards to the surface of the water. But other caves in this island are wonderful, although by different means. The White Cave has some magnificent stalactites, which are particularly beautiful in the inner cove where the light playing on them produces varied and lovely effects. The Natural Arch is another wonder of Capri and is situated near the White Grotto; it is a splendid work of Nature, who has here hewn for herself a triumphal monument amongst these rugged and imposing cliffs.

Runic Stone, Norway.—The word *rune* of the old Germanic and Icelandic languages signifies letter, though the deeper meaning of mystery which characterizes it to-day was likewise attached to it when the old North folk, gaining an insight into sign-writing, thanks most likely to the intermediary of Phœnician traders, concocted an alphabet which was as intelligible as hieroglyphics to the minds of the vulgar illiterate. This alphabet—in reality there are three—was used, with more or less literary effect, to commemorate heroic deeds or the names and doings of successful warriors. As a rule they were inscribed on stones and placed in prominent positions, or else beside or on top of graves—at a later date these latter being replaced by stones, with or without inscribed runes, buried in the graves themselves.

Scandinavia and Denmark are the richest fields for runic mementoes, and a fine example is the stone at Trune, Norway, with its inscription: "I, Wiwar, made these runes." Who this Wiwar was, what his deeds and feats, is matter, not for the historian who cannot pierce beyond the mist of time, but for the poet, who can imagine some bold warrior or passionate lover. We can surmise, however, that the man whose name has been brought down to us to-day

RUNIC STONE, NORWAY.

"I, Wiwar, made these runes," is the inscription on this stone at Trune. It is supposed to date from the sixth century of our era.

Photo by] [Donald McLeish.

THE MATTERHORN.

lived towards the sixth century of our era, because the range of discovered runic inscriptions seems to date from a period between the fifth and ninth centuries.

The oldest alphabet consisted of twenty-four letters, beginning with the letter "f," and the words were written from right to left. Another alphabet followed of twenty-seven letters, and this is usually written from left to right: whereas a third, a composite form, was written indifferently from right to left or from left to right. It is not only on stones that runes have been inscribed. The best examples are on metal objects, such as the gold *bractea* in Vadstena, Sweden, the steel knife found in the Thames and now in the British Museum, and the Thorsbjerg shield-buckle in the Museum at Kiel. An exquisitely wrought gold horn was discovered at Gellehus, near Tondem, in 1734, but thieves got possession of the priceless relic and melted it down, luckily not before a plaster copy had been taken of the inscription.

The Matterhorn.—To enumerate the snow-capped peaks which peer eternally down into the valleys and vales of Switzerland would be a sorry task, but to pick out one of the many and describe its beauties and charms is a labour of love, not only for the sturdy climber who, scaling fierce rocks in the summer months, lives his experiences over again of a winter's evening, but also for the casual tourist and, in a higher degree, for the native dweller on Alpine meadows. Moreover, if priority be given to any one peak, surely the lordly Matterhorn, gazing almost contemptuously down on cosmopolitan Zermatt, has claims which few will dare dispute. It is a noble pile of gneiss and glacier, a pyramid by nature, a gigantic cone. It is fierce in its passions, reminding us of some feudal baron gnawed with haughty pride. Stones and rocks roll down its sides, eager for a victim; avalanches slide down its slopes and topple with a loud crash, heard miles away, over a yawning chasm; between it and Zermatt lie the Leichenbretter, literally "boards for carrying the dead," and behind it, on the Italian side, stretches the Linceul, or winding-sheet. Surely an ominous peak, inspiring dread, and the impression of awe is strengthened if a visit be paid to the small cemetery on the edge of the village; here are buried some of the mountain's victims, the first being three Englishmen and a guide. They were of Mr. Whymper's party which reached the top of the Matterhorn in July, forty-six years ago, the first to scale the virgin summit. But only three returned to Zermatt; the others, Lord Francis Douglas, the Rev. C. Hudson and Mr. Hadlow, together with the guide, Michel Croz, fell four thousand feet down a precipice, and would have dragged the three surviving climbers along with them had not the rope which bound them been cut by the teeth of a jagged rock.

The Matterhorn is not the highest peak in the region where it stands. Its fourteen thousand

seven hundred and eighty-two feet are easily surpassed by the Dufourspitze of the Monte Rosa and by the Dom of the Mischabelhörner. Nevertheless, it is the *clou*, the great attraction at Zermatt. This is due to its imposing shape and its bold outline. The last and noblest scion of a spur or ridge which dwindles away to the Italian plains on its southern side, it stands forth alone, apparently lost in its own grandeur and importance, hardly deigning to look at the fields of frozen snow at its feet. Magnificent it looks from the height of the Gornergrat, reached from Zermatt by means of a rack-and-pinion railway, but perhaps the best view of the solitary giant is obtained from points of vantage in the deeply-wooded Zmuttal. Here green trees form the middle ground, and lording it over them, glistens the Matterhorn—or Mont Cervin as the French have deemed wise to baptize it—and no other mountain or peak rises skywards to detract from its splendour. It is at sunset, however, when the snows on its rugged sides blush in a warm glow, and send a thrill of

Photo by] [*Donald McLeish.*

THE MATTERHORN.

A photograph taken in the early morning, showing the rugged peak of the Matterhorn to the right and the vast expanse of sun-lit clouds overspreading the valley of Zermatt.

roseâtre-vermilion over rocks and cliffs, that the stupendous cone is unique among mountains, the Alpenglühe giving it a crown that no peak is worthier to wear.

The Giant's Causeway.—The Irish would not be true to the spirit of Celtic mysticism and poetry had they not woven around one of the wonders of the world, the Giant's Causeway in the County of Antrim, a mesh of legend, folklore and romance. The existence of fields upon fields of gigantic, truncated pyramids and columns of varying polygonal sides had to be explained, as also that of the Porticoon and Dunkerry caves, into the darkness of which boats are rowed on the swell of the waves, and in whose mysterious depths sounds reverberate as from the cannon's mouth. Here, where the columns rise, forming, as it were, the back to a low step, is My Lady's Wishing Chair ; there where the basaltic mass takes a weird shape, are the Nurse and Child who were petrified by a giant because his wife had betrayed him—so runs the legend. And, in a similar strain run hundreds of legends, the chronicling of which would constitute an epic poem of giants unparalleled in the history of literature. The giant, Fin MacCoul, would be the hero, for he it was who is reputed to have built the Great Causeway across the sea to Scotland, so that his enemy, the Scotch giant, might step over

high and dry to get the thrashing he so richly deserved. The Giants' Amphitheatre, with its perfect tiers of broken columns overlooking the bay, was built by him to amuse his guests, and when he breathed heavily, the pipes of the Giants' Organ, likewise formed of high columns, played a tune the exact notes of which have presumably been lost to us.

It would be impossible within the limits of a short paragraph to do justice to the strangeness and poetry of the Giant's Causeway. It is a honeycombed series of beaches without a grain of sand, flanked by the ruins of two castles, Dunseverick and Danluce, situate high above the sea on isolated crags. Nor must the Carrick-a-Rede be forgotten, that lonely rock island in the path of the salmon shoals. To reach it during the season fishermen sling a rope bridge between it and the mainland, eighty feet above the roaring waves. The accompanying photograph will give but a passing impression of what is surely one of the unique spots on our globe. Unfortunately it cannot do justice to the whole range of wonderful beach, for the very simple reason that no two spots resemble each other, but are as varied in form as are the legend or romance attached to each. The size of the columns and pyramids varies likewise, some attaining a height of thirty feet. Now they are close-fitting, forming a level tessellated floor, now loose and irregular. At times their regularity is so perfect as to appear to be wrought by hand and to have been artificially grouped into colonnades of most exquisite harmony and design; at others, all is wild and broken and thrown about as though giants had really spent their time and their strength in destroying what they are reputed to have created.

From Stereo copyright by] *[H. C. White Co.*

THE GIANT'S CAUSEWAY.

On the northern coast of Ireland this strange formation of columnar rocks is to be found, continuing along the shore for a distance of about four miles.

Constantinople.—The capital of the Ottoman Empire—Stamboul as it is known to the Turks, and Constantinople to the Christians—is one of the most beautifully situated cities in the world. Until recently, that is, prior to the overthrow of the Hamidian rule, it lay somewhat off the beaten track, but the new régime has vastly improved Turkish intercourse with the rest of the civilized world, and to-day the dirty streets of the old town are filled during the season with tourists eager to become acquainted with some of the marvels of the Sublime Porte. But it can, with justice, be asserted that nine-tenths of the charm of the city are due to its surroundings—the setting, without which it would not be the pearl of the Mediterranean. There is hardly a more wonderful approach to any maritime port, either in the Old or the New World, and the first view of Modern Byzantium, as seen from the boat sailing up the Sea of Marmara, is a sight never to be forgotten. There is the intensely blue water of the Mediterranean, and the intense blue of the sky. A bower of green, with palaces and minarets glistening from afar among the trees of an almost exotic exuberance, seems to rise out of the sea ahead of the steamer's prow. Then the vessel enters the Bosphorus, with Asia on the east and Europe on the west: the former is represented by Scutari, where the Germans have erected the terminus station of the Anatolian railway, and the latter is heralded by the Serai of the Sultan in its extensive park. Ahead, the European quarters climb the wooded hillside of Pera, emerging as it were from the commercial docks of Galatea,

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THE GIANT'S CAUSEWAY.

The strange beauty of the Causeway appealed strongly to the imagination of the Celt; so it is that many Irish legends have reference to this spot, whose chief hero is the giant, Fin MacCoul. These basaltic rocks are, however, of volcanic origin.

Photo by] [*J. W. McLellan.*

SANTA SOPHIA, CONSTANTINOPLE.

This noble church is the grandest example of Byzantine architecture and was built in the first half of the sixth century. The most important feature is the dome, which is 107 feet in diameter and 182 feet in height.

resembling more closely an Italian port than part of the empire whose emblem is the Crescent and not the Cross. Time was when Constantinople, head of the great Roman Empire of Constantine, was Christian, and no Moslem had set his foot on European soil. Then St. Sophia was the most important religious edifice in Christendom: to-day it is a mosque, and the Koran stands in the *mihrab* facing south-east in the direction of Mecca. Behind Constantinople, properly speaking, and separating it from Pera and Galatea, lies the Golden Horn with its two bridges spanning this western arm of the Bosphorus. Beyond the second bridge are the naval docks; between it and the first bridge, and extending to a certain distance out into the Bosphorus, are the commercial docks. This, together with the bazars, is the busiest part of the capital, and has a personality all its own, owing to the extraordinary agglomeration of Levantine, Moslem, Christian and Jewish types of men and women, now strikingly Asiatic, now intensely European in appearance.

The past of Constantinople is one of the most eloquent pages in the history of the great migratory movement of Asiatic peoples during the first ten centuries of our era. Its strategic position was such as to make its capture the central point of any campaign of invasion from the east, and, after the Goths and Huns had been driven from its walls time and again, the Crescent waxed in Asia Minor and Ottomans were the standard-bearers. It was at the moment when the first fleet of Moslems appeared in the Sea of Marmara, that the city attained the height of its power and fame under the Emperor Justinian. The arts flourished—that rich Byzantine art which was doomed to a short existence, but which was nevertheless able to exercise a powerful sway over Christian and Moslem art, and, by building a world-wonder like St. Sophia, saw it established as an architectural model for mosques, and a decorative creation to be imitated by Christian churches throughout the Occident.

By the Photochrom Co., Ltd.

THE MATTERHORN.

There are few peaks of the Alps so well known, or so easily recognised, as this noble mass of gneiss and glacier, which, rising to a height of over 14,000 feet, stands like a guardian over Zermatt Valley.

Aja Sophia is unique. Even eliminating the gorgeousness of its varied marbles—green columns from the temple at Ephesus, and red ones from the Temple of the Sun at Baalbek—the wavy sinuousness of the tessellated floor, and the glistening splendour of gold and mosaic decorations, the building would command the attention of the most casual visitor. The exterior, it is true, can hardly claim to be impressive: it is too squatty, but this effect is produced by the minarets which were a later, Moslem addition and the unfortunate streaks of red which run horizontally around the edifice. But even here, from the outside, can be observed the one predominating motive, the problem which the architect sought to solve when he built his church, now turned into a mosque, and that is the adaptation of the circle to the square, the crowning of a cubical with a spherical body, at the same time depriving the square of its corners by means of rounded bays likewise surmounted by half-cupolas, or *media naranjas* (half-oranges) as they are generally called after their Spanish name, for it is in Spain that the most perfect repetitions of this principle were attained. As for the interior of the Aja Sophia, the airy cupola dominates it as it dominates no other building in the world. It is the one feature which stands forth vividly, which astounds and which is remembered when other details, either decorative or constructive, have paled away. Mosaics, marble and gold are almost exclusively used in the ornamentation of the interior, and huge shields, bearing Arabic inscriptions and set at stated intervals in the frieze show that, after having fought and resisted the foreign intruder from the seventh to the fifteenth century, the Christians were obliged to surrender, and their marvellous church, dating from the sixth century, fell into the hands of the Moslem conqueror. Otherwise, the plan of the building has been changed but little. Instead of the altar facing east, the *mihrab* points towards Mecca in the south-east, with the result that the carpets

THE HALL OF 1003 COLUMNS, CONSTANTINOPLE.

Built by the Roman Emperor Justinian, this "hall" was originally intended to serve as a cistern for the storage of water, of which Constantinople possessed a very inadequate supply. It is a forest of giant columns, many of which bear inscriptions and monograms.

run diagonally across the floor, producing a strange effect. Many of the mosaics portraying human figures have been white-washed, but the ignoble covering is gradually wearing away, leaving the resplendent under-surface exposed.

Besides the mosque of St. Sophia, Stamboul can still point to many edifices and monuments dating back to the days of the genial Emperor Justinian. A column, partially burnt to-day, commemorates one of his victories. It stands alone, a solitary pillar, within ten minutes' walk of Aja Sophia, and near by, at the further end of a square, eleven shafts crossed with iron bars, peer down into the giant Justinian cistern of the thousand and three columns. The columns, many of which bear inscriptions and monograms, are half buried in earth to-day, for the cistern has not been used for centuries and is consequently as dry as a dust-heap. Stamboul, deprived of a generous supply of water, possesses many of these cisterns, one of them extending beneath the western end of the St. Sophia mosque.

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THE HIPPODROME, CONSTANTINOPLE.

Originally a circus surrounded by marble seats, the Hippodrome is even to-day the most striking relic of ancient Constantinople. The nearer obelisk was brought from On (Heliopolis), while with the preservation of the other the fate of the Ottoman Empire is supposed to be connected.

Adelsberg.—The Julian range of Alps in Illyria, to the north of Trieste, in Austria, is noted for what may be termed its "nature freaks." Limestone is the predominant rock, and this, as is well known, lends itself to peculiar formations and is especially subject to the action of water. There is one river, for instance, called the Poik, which, emerging from the soil to the south of St. Peter, about ten miles to the north of Trieste, flows in a northerly direction until it suddenly disappears under the ground at Adelsberg, to emerge again two and a half miles further north under a new name, the Unz. Its career is short, however, for it disappears below the soil again, and when next seen, is called the Laibach—for a short sweet hour only, however, for the next it has joined the Save in its race to meet the lordly Danube. The Poik-Unz stage of the river's existence is not devoid of unique interest, for in its subterranean passage at Adelsberg, it has helped to form a wonderful grotto, one of the most beautiful limestone creations in the world.

The Adelsberg Grotto, crowned by the mediæval ruins of a castle on the Schlossberg, was discovered in the Middle Ages, as is to be read in the chronicles of those days, but its very existence was forgotten until it was rediscovered in 1818. In more recent times the village fathers have done their utmost to exploit the grotto for what it was worth, and have even gone to the expense of having it lit up with electric light in order to enable visitors to examine its beauties under the most favourable conditions. They have, moreover, explored the huge caverns along a total length of two and a half miles. The result is a fairy-like series of chambers varying in size from the Franz-

SANTA SOPHIA, CONSTANTINOPLE.

There are few more gorgeous interiors than that of Santa Sophia. It is enriched with marble columns brought from Ephesus and others purloined from the Temple of the Sun at Baalbek. The magnificent dome is decorated with jewel-like mosaics of unrivalled beauty.

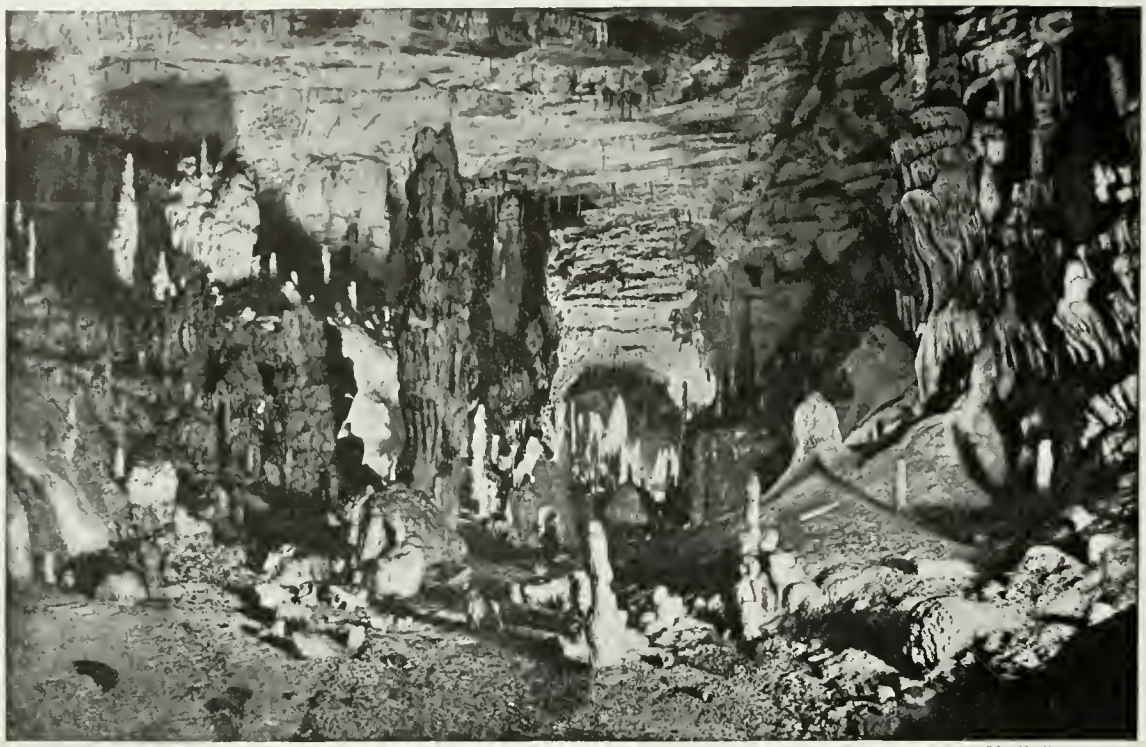

Photo by] [*L. H. Eisenmann.*

THE ADELSBERG CAVES.

North of Trieste, in the Julian range of Alps, are the limestone caves of Adelsberg. They have been formed by the action of a subterranean river, whose waters have deposited in their course wonderful minarets and spires of lime.

Joseph-Elisabeth Grotto to tiny niches or recesses flanked by natural pillars and stalactites. The former, the Franz-Joseph Grotto, is one of the largest of known caverns, one hundred and twelve feet high and two hundred and twenty-five feet long by almost as many wide. In it stands the Belvedere, a mound composed almost entirely of stalactites. Another of the larger caverns is the so-called Kaiser Ferdinand Grotto, subdivided into various chambers, the largest of which is used as a ball-room on Bank Holidays during the summer. The effect of dancing groups swinging to a Viennese waltz in the brightly illuminated hall, is theatrical in the extreme, and it can safely be asserted that nowhere, except on the stage or in an Arabian Nights tale, is such a *mise en scène* to be found. It is grimly humorous, moreover, that within hailing distance of this hall of gaiety should be situated the Hall of Mourning, where half-crumbled pillars and cones have more the aspect of a neglected necropolis than of a ball-room.

Perhaps the most interesting part of the grotto is the entrance. It is reached by an avenue of lime-trees and, on entering the first vestibule, the visitor walks along an avenue of stone with, ahead of him, a double archway of natural columns forming a gate leading into the Poik Grotto, where the river, sixty feet below the entrance, rushes northwards in its mad career. The sound of the curdling water is imposing. Two natural and one artificial bridge lead beyond the subterranean channel and the echo of its inky rapids, to the handsome Cathedral Hall where gigantic Gothic pillars support the massive roof, and half lights predominate, thus giving the chamber the appearance of being larger than is, in reality, the case.

The Adelsberg Grotto is not the only one in the neighbourhood. One mile west the Ottok Grotto is hollowed out of the rock, and though smaller and less picturesque than its rival, it is noted for the spotless white of its stalactites and columns—those in the Adelsberg Grotto being more frequently of a dirty grey or brown.

Cologne Cathedral.—Cologne and Munich, Catholic towns both, have ever been the centre of German art, and though the former has lost her prestige in such matters, she can boast of the most remarkable Gothic cathedral in Germany, and one of the finest examples of the kind in the world. Though built after the original designs laid down by the architect in the thirteenth century, the edifice, excepting a few chapels, the choir and part of the central nave, was not completed until the nineteenth century. The scheme to undertake its completion dates from 1842, and it took forty years to terminate the work at a cost of over a million pounds, part of which was granted by the Government, part raised by means of a lottery and the remainder contributed by the public. The building is of an imposing size and height, flanked by a wealth of flying buttresses, turrets, gargoyles, and is richly ornamented with cornices and foliage. The western façade is a minute reproduction of the original design, and shows early Gothic at its best. The same can be said of the towers—that above the croisée being three hundred and fifty-seven feet, and the western towers five hundred and fifteen feet high. The latter have a square base, and an octagonal second body surmounted by a graceful spire. The large bell, one of the largest in Germany, is made of the gun metal provided by the guns captured from the French in 1874.

The interior of the cathedral is dignified and solemn, as becomes the spirit, if not always the reality, of Gothic architecture. The central nave is flanked on each side by double, and the transept by a single aisle ; the former is five hundred and seventy feet and the latter two hundred and eighty-two feet long. Architecturally speaking, the choir is almost a replica of that at Amiens, but owing to the perfection of some of the minor details, as well as to the exquisite harmony of the *ensemble*, connoisseurs are inclined to prefer it to the great French masterpiece. It is, however, in its stained

Photo by] [*L. H. Eisenmann.*

THE ADELSBERG CAVES.

At Adelsberg the Poik disappears into the earth to reappear two and a half miles further north as the Unz. The river in its course through the rock collected heavy deposits of limestone, and these were left as stalactites and stalagmites upon the walls of the passage which it had made underground.

windows that the Cologne Cathedral can take just pride, and when the memory of other details have faded, the rich, mellow colour of thirteenth-century panes, priceless because practically unique, linger vividly in the mind's eye. We forget the Chapel of the Three Wise Men with its bones of questionable authenticity, even the old plan of the cathedral as drawn by an architect of long ago, and the Dombild painted by Meister Steffen (Löchner) in sombre hues—a picture praised by Dürer—but we can never forget the five stained windows of the choir, dating from the beginning of the sixteenth century, and those above the triforium, older still, and more mellow, as wine that has been kept for years in some dark cellar.

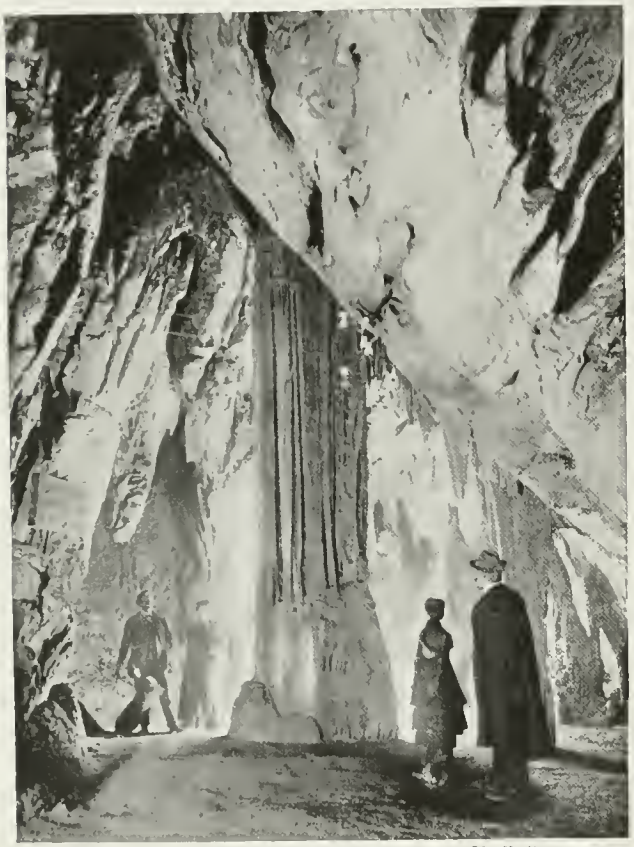

Photo by] [*L. H. Eisenmann.*

THE ADELSBERG CAVES.
A gigantic stalactite.

Aletsch Glacier.—There is perhaps no sport—with the exception of flying and ski-ing—that can compare with mountain climbing for the exhilarating sensation it produces. The arduous climb over rocks, followed by a tramp on the blinding snow of a glacier; the perilous cat-like walk along a ledge overlooking a precipice, and the crossing of a *crevasse* on a narrow bridge of ice; the struggle up a narrowing flue, and then—the summit, the glorious view over myriad snow-capped peaks and fields of ice, those in the distance of a faded white, those at hand sparkling as the sun reflects its rays on virgin flakes; the while, miles below in the valleys, lakes nestle in green meadows, huts and houses dwindle to the size of pin-heads, and villages are no more than tiny heaps of sand scattered in perfect disorder by some careless genii. No wonder, then, that mountainous regions, such as Switzerland, and more particularly the Bernese Oberland, should yearly attract thousands of visitors, who either, as experts, seek the more difficult peaks, or, as amateurs, content themselves with an easy climb, to be repaid by a view perhaps less extensive but no less magnificent than that enjoyed by their hardier rivals. For the gentle walker are such as the Eggishorn (nine thousand six hundred and twenty-five feet high), the highest point of the ridge separating the Rhone from the Great Aletschgletscher; for the experts the bold Aletschhorn (thirteen thousand seven hundred and twenty feet), second among the peaks of the Bernese Alps—the first being the Finsteraarhorn, with an altitude of fourteen thousand and twenty-five feet.

The easier climb of the Eggishorn is not to be despised. The view to the north, with the Aletschhorn towering above the landscape and throwing off its many glaciers to the right and to the left with startling lavishness, is as fine a sight as can be enjoyed by the mountaineer. At his feet the gigantic glacier—Grosser Aletschgletscher—curls up and around the peak from which it has derived its name, and which stands proudly contemplating its snow-white robes, the while throwing off the Central Glacier flanked by two spurs, which do but succeed in emphasizing the superior height of their lord and master. There are mountains, like the Jungfrau, which appeal on account of their mass; others, like the Matterhorn, scorn comparison, whereas the Aletschhorn,

Photo by] [*L. H. Eisenmann.*

THE ADELSBERG CAVES.

These caves were discovered first in the Middle Ages, but for centuries their existence was forgotten until they were rediscovered in 1818. Now dancing takes place in some of the larger grottos, which are brilliantly illuminated. The above view is of "The New Hall."

Photo by] *[The Photochrom Co. Ltd.*

COLOGNE CATHEDRAL.

Although the original designs for the cathedral were drawn in the thirteenth century, the building was not completed till the latter part of the nineteenth century. It is a magnificent specimen of Gothic architecture, and the beautiful stained-glass thirteenth century windows in the choir are world-famed.

like a shrewd woman, makes use of its surroundings to enhance its own beauty. *À chacun son goût.* The peak in question, surrounded by a sea of glaciers and frozen waterfalls, that has not its equal for beauty in the known world, and is, moreover, the largest in the Alps, was first scaled by Mr. F. F. Tuckett, an Englishman, in 1859. It is no easy climb, being one of the "hard nuts" to crack, but the view from the summit amply repays all hardships and perils.

From the Eggishorn, where the best front view of the Aletsch region is to be obtained, a short climb down the eastern slope brings the mountaineer to the dark-green Märjelen See, at times gorgeously coloured with floating blocks of ice that catch and reflect the sun's glare. A path leads over the ridge to the Great Aletschgletscher, which winds like some huge serpent up a valley between the Aletschhorn on the left and the Fieschhorn and Faulberg on the right in an easterly and then northerly direction. Opposite the Faulberg it is joined by the Grosser Aletschfirn, or snow-field which circles around the Aletschhorn on its northern side, thus succeeding in isolating it, as it were, from the rest of the world by means of a frozen sheet.

Orange.—Nîmes, Arles and Orange, the three Franco-Roman cities in the Midi, can each boast of unique monuments dating from the days of the Roman Emperors. Foremost among these monuments are the Amphitheatre at Nîmes and the triumphal arch and theatre at Orange. The arch is not only the largest in France, but the third in size and importance in Europe. It is seventy-two feet high by sixty-nine feet wide and twenty-six feet deep. It has three arches, which, together with the cornice, are supported by Corinthian columns. Remarkable are the variety and elegance of the carved ornamentation still visible on three sides—the fourth having suffered considerably since the date of the monument's erection in the first century of our era.

But if the arch has its peers and equals, not so the open-air theatre, which is the most perfect of its kind in existence. It is, moreover, essentially Roman, with hardly a trace of Greek influence, as is to be seen, for instance, in the Tuscan columns still standing. The theatre at Arles, on the other hand, is typically Greek, so that the student can easily compare the beauties of each order, without leaving the district in which both are situate. The Orange Theatre, dating from the reign of Hadrian, still possesses, though in a deteriorated state, its façade facing the grades of the amphitheatre, which are cut in a hill-side, crowned to-day by a gilt statue of the Virgin. The façade, one hundred and twenty-one feet high, by three hundred and forty feet long and thirteen feet deep, forms the background for the stage, which was roofed in and supported along the outer edge by a colonnade. Five gates, for the exit and entrance of actors, lead into the building from the stage; three of these gates are still in use to-day, for several plays have been staged in this old Roman open-air theatre within the past few years. The central gate is larger than the others, and was called the "Royal Gate"; only the principal actor could make use of it, and a niche above it contained the statue of the Emperor Hadrian The upper body

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THE ALETSCH GLACIER.

This is the largest glacier in the Alps, and fills the valley between the Aletschhorn and the Fieschhorn, extending for a distance of about twelve miles.

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THE ALETSCH GLACIER.

A photograph of the edge of the glacier, showing the dangerously-concealed crevasses which are produced by the pressure of the ice-masses.

of the façade contained a double row of corbels, projecting over a range of blind arches, and furnished with holes for the insertion of poles, to which was fastened the *vellum*, or canvas awning, which covered the amphitheatre and was attached to pickets stuck in the ground above the highest grades. Though the building has been partially restored, much can still be done to make it resemble more closely the edifice it used to be; and the authorities, who have already turned it into a national theatre, can be helped in their work of restoration by studying an existing sketch of the building by an Italian traveller before its partial destruction in the eighteenth century.

Drei Zinnen.—It is not a far cry from the Alps of Switzerland and Northern Tyrol to the Dolomites of Southern Tyrol in Austria, and yet how different from the Bernese Oberland and the region of the Gross Glockner is the aspect of the Ampezzo district. In the former—the Alps properly speaking—forms are irregular, rugged, chaotic almost, but in the latter there is some attempt at regularity, and, what is even more characteristic, twin and triplet peaks, or composite pinnacles of extraordinary sharpness, are numerous, and often streaked by veins of the most gorgeous colours. Both these phenomena are produced by a peculiar magnesium limestone, named after the geologist Dolomieu, and constituting the material out of which these mountains and gorges have been formed. A casual glance at the map of the district which has its centre in the village of Cortina, shows the frequent occurrence of three, four or five-peaked mountains, with awkward names corresponding to the multiplicity of summits, such as the Five Brothers, the Three Peaks, and others of a similar nature.

The highest peak in this region of crags and pinnacles is the solitary cone of Marmolata, which rises to a height of ten thousand nine hundred and seventy-two feet; but far more characteristic of the formation of the Dolomites are the Drei Zinnen—or "Tre Cime de Lavaredo," as they are called in Italian, for they stand almost on the frontier line between Italy and Austria. These noble peaks, three in number, form the head of the Black Rienz Valley, on the eastern confines of the Dolomites, and are visited yearly by thousands of tourists and climbers, the former anxious to become acquainted with the striking beauty of the Ampezzo district, the latter eager to scale crags and summits that offer danger even to the hardy expert. This is, above all, the case as regards the smallest of the three peaks, the Kleine Zinne; the ascent of the middle or Vordere Zinne is not so difficult, whereas comparatively easy is that of the Grosse Zinne, nine thousand eight hundred and fifty feet high.

Paestum.—There are few more impressive scenes than that afforded by the Greek temples at Paestum. Once a flourishing city occupied this beautiful bay on the Campanian coast. Here, according to Strabo, the adventurous Greeks had founded a colony as far back as B.C. 600, calling it after their sea-god Poseidon, and for a time the new city of Poseidonia must have flourished exceedingly. Then were built the magnificent temples which are the subjects of its fame to-day;

[*The Photochrom Co. Ltd.*

Photo by]

THE THEATRE, ORANGE.

This Roman building dates from the time of Hadrian. The stage, contrary to the usual custom, was roofed, and this roof was supported on the side facing the auditorium by columns: these remains are therefore unique and are also comparatively well-preserved.

[Photo by] [G. R. Ballance.

DREI ZINNEN.

Three famous peaks of the Dolomites of Southern Tyrol. They rise abruptly from the head of the Black Rienz Valley, and are amongst the highest in this range. The rock of which they are composed is a peculiar magnesium limestone.

but the city did not long enjoy its splendour, it early fell into the hands of the Lucanians, and, later, after the death of Pyrrhus, it came under Roman rule, and was subject to a fresh influx of settlers who founded the colony of Paestum. Soon it became noted for its fever-laden air, which led to its early desertion, and probably for this very reason to the splendid preservation of its Greek structures — the most perfect specimens outside Greece. The Temple of Neptune is the largest, most beautiful and best preserved of the three noble ruins. It is one hundred and ninety-seven feet long and eighty feet wide. Thirty-six massive Doric columns rise from the stylobate, six at each end and fourteen at each side; their proportions are very fine, combining a sense of power with beauty of outline. They taper towards the top, but after the manner of all Greek workmanship, they are not composed of absolutely straight lines, each pillar having a swelling, or entasis, in its central girth, which is observable at a short range, but which, in the distance, has the effect of enhancing the fine proportions of each shaft. The building material is a kind of travertine which formerly was covered over with stucco; not such a substance as is usually known by that name to-day, but a material which, when polished, was smoother and whiter than plaster, giving the building the appearance of marble. That stucco has now fallen off, but the bare blocks of travertine have a peculiar beauty, acquired during the lapse of time. They have been acted upon by the sun and climatic conditions so that they have taken on a rich amber colouring. Very lovely it is, too, for it seems as though the sun's rays had through the centuries sunk into the stone and were imprisoned there, so that the building has become part of surrounding Nature, a creature of the bright Italian sun, a temple for Nature-worshippers, rising like a giant from the surrounding luxuriance of undergrowth, with the intense blue of the Gulf of Salerno in the distance and the intense blue of the sky overhead.

There is no sight "more touching in its majesty" than that which is presented to the traveller

as he looks upon these three great lonely ruins from the vantage ground of a distant deserted terrace.

Bologna, the far-famed university city of Italy, the rival in learning of Oxford, the Sorbonne and Salamanca, was, in the days of the Renaissance, one of the great centres from which radiated the teachings of the Humanists. Consequently, the rôle of Bologna, in the first year following the dawn of the new scholastic movement, was in every way exceptional, and though Rome, Pisa and Florence took the lead in matters pertaining to the fine arts, in jurisprudence and scholarship she had no rivals in the fourteenth and fifteenth centuries. Nor is it to be wondered at that the reaction against the decadent Mannerists of the sixteenth century should emanate from the university town, where Caracci founded the eclectic school and paved the way for Guido Reni, whose San Sebastian is world known, and who has left in San Domenico a richly-coloured fresco representing the Apotheosis of St. Dominic.

Noteworthy among the monuments of Bologna is, in the first place, the university to which the city owes, in so large a manner, its name—the palatial edifices, opening through arcades into the streets, lend a personal note to the general aspect that is not easily forgotten. But famous among the Old-World wonders of Bologna are the two Leaning Towers in the Piazza di Porta Ravegnana, approached from the Via dell' Indipendenza through the Via Rizzoli, one of the busiest streets in the city. The towers are of varying height, the tallest, known as the Torre Asinelli, from the name of its builder, who lived in the twelfth century, is three hundred and twenty feet high, and it is four feet out of the perpendicular. Its companion, the Torre Garisenda, likewise named after its builder, is an uncompleted monument, one hundred and fifty-six feet high, and eight feet out of the perpendicular. The slope of neither of these towers is equal to that of the Leaning Tower at Pisa, which stands fourteen feet out of the perpendicular. The height of the Asinelli tower is greater, however,

THE TEMPLE OF NEPTUNE, PAESTUM.

This temple is one of the noblest specimens of Greek architecture, and ranks next in importance to those at Athens. It is built of a kind of travertine, and was formerly covered with stucco but this has now fallen away and left the noble pillars in all their golden beauty.

by thirty feet, and, consequently, it is the highest leaning tower in the world. A flight of four hundred and forty-seven steps leads to the top of the square-built brick structure, and the view over the city and its suburbs from the summit is one of the sights which every inhabitant will advise the traveller to enjoy before voyaging further afield in the land of the Renaissance.

Tarragona.—On a hill rising steeply from the Mediterranean, between Barcelona and Valencia, stands the old city of Tarragona, at one time capital of the Roman Empire of Hispania, and to-day but a shadow of what it used to be. Not so the vines, which in the days of the Emperors produced a beverage that was drunk with relish, and to-day continue producing wines the exportation of which is the staple industry of the neighbourhood. The cathedral is one of the finest examples of elaborate Spanish Gothic, and its archbishop second in importance in the Church hierarchy of Spain. Of the old Roman monuments few are left to tell the tale of the city's wealth under the Emperors, and it is unlikely that Tarragona would figure among the wonders of the world were it not for its Cyclopean Wall, to be numbered not only among the few pre-Roman remains in the Peninsula, but also as one of the riddles of the past that await a solution. They are of extraordinary strength and dimensions, and still surround the hill on three sides, having been demolished on the fourth, looking towards the new town with its broad streets and avenues. Unfortunately the height of the old walls can hardly be calculated, for when the Romans came to Tarragona in the days of Scipio, they used the huge unhewn blocks of the Cyclopean Walls as foundation-stones for the wall as it stands to-day.

Photo by] [*H. C. White Co.*

THE TWO LEANING TOWERS OF BOLOGNA.

The completed tower is 320 feet high, and is four feet out of the perpendicular, while its incomplete companion tower is eight feet out. They were erected in the twelfth century, and are named after their builders.

The most remarkable feature of the Cyclopean Wall is the size of the blocks of stone. Some of them are so large and heavy that fifty yoke of oxen could not drag them up an inclined plane having a gradient of one foot in a thousand. How, then, were they put in their place, and where did they come from, for neither is there any sign of a quarry in the neighbourhood nor have the blocks been hewn? We have no proofs, moreover, that the builders knew the use of iron, and it is even doubtful if they did. To add to the amazement produced by this manifest work of a race of giants, a gateway still stands as it did hundreds of years before our era. It has a depth of almost seven yards, showing the thickness of the walls. The aperture itself is one and a half yards wide by two and a half yards high. The jambs are each formed of one block, and the lintel is merely another block reposing on the jambs and measuring five yards across. How was this mass of stone put in its place? The constructors did not know the use of mortar or lime, and filled in the crevices between their blocks with smaller stone. On the north-east side stands a tower, the foundation of which—four stones in the form of a square—is cyclopean, whilst on another tower is the sculptured face of a woman, whose claim to beauty rests on a full, round face, heavy

Photo by] [*J. Laurent y Cia.*

THE CYCLOPEAN WALLS, TARRAGONA.

In certain parts these walls attain a height of thirty-three feet. It is the lowest course of enormous roughly-hewn blocks which dates from prehistoric times. The upper courses were probably built under the government of the Scipios, and later in the time of Caesar Augustus.

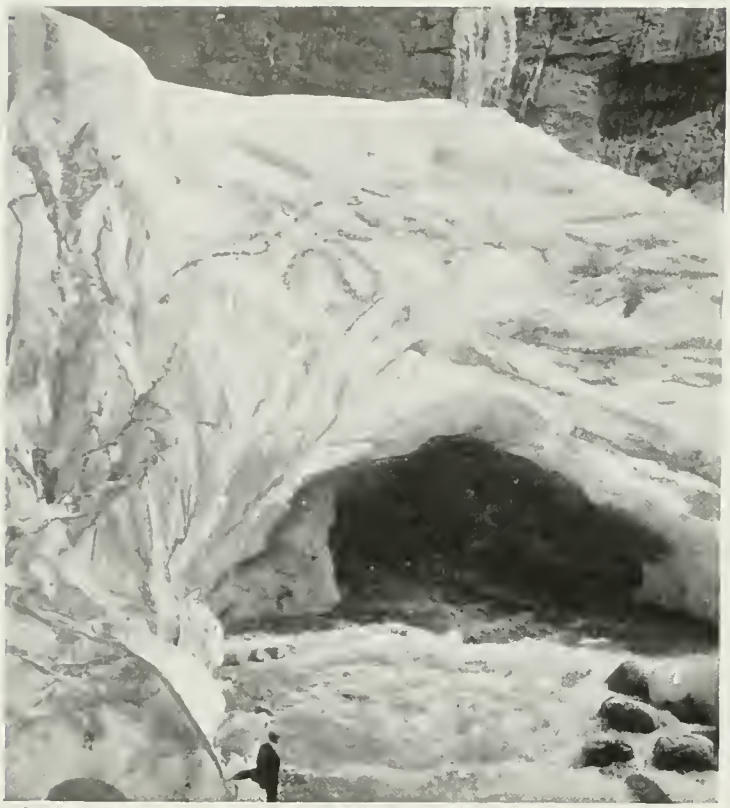

Photo by] [*H. C. White Co.*

THE BRIGSDAL GLACIER.

This glacier is the steepest offshoot of the Jostedal Glacier, which boasts of an area of about 580 square miles.

lips and a flat nose. The total length of the wall is about two miles, and the height varies from ten to thirty-three feet. In order to command a good view of the pre-Roman ring surrounding the city, it is advisable to follow it from the exterior, along a path made for the purpose. It is only by doing this that an idea can be formed of the immense size and weight of each individual block of stone.

Brigsdal.—In the land of nightless summers, where twilight hangs over the earth from sunset to sunrise, and rock-hewn islands rise sheer and grim out of the blue waters of a fjord, it is difficult to decide where Nature has bestowed beauty with a more generous hand. Slightly to the north of Bergen, two of the largest fjords eat their way land-inwards for many miles, and both terminate in moraine lakes of crystal-clear water at the foot of gigantic glaciers—or, to be more accurate, at the foot of steep branches of the same glacier, that of Jostedal, the largest in Europe. These fjords are the Sognefjord and the Nordfjord, and though the former is the longer of the two, it is generally admitted that the latter is the more romantic and perhaps the more picturesque. From the Atlantic the steamer passes through the entrance between huge precipices, and moves slowly forwards, as though wishing to ram its prow against a wall of rock ahead. A turn, and a new passage appears, followed by another lake-like sheet of water. Here the precipices are crowned by peaks piercing the blue sky; there they are broken to make room for some Norvegian village with its quaint church. Again pines slope gently seawards, a glacier crawls almost to the water's-edge as though wishing to bathe its feet in the rock-bound lake, or a high waterfall heaves into sight—a streak of snow-white against a grey-black cliff. The while the steamer sails on, up the fjord to Olden. Here it comes abruptly to an end; ridges of rock separate it from the moraine lakes of fresh water beyond. These are three in number, each lying at the bottom of a valley. One, the Strynsdal, runs in an easterly direction; a second, the Loendal, takes a more south-easterly course, and the third, the Brigsdal, goes to the south to join the *brae* of the same name. Climbing over the ridge separating Olden from the moraine lake, the visitor reaches the small village of Brigsdal, from where a path leads to the glacier. The first general view of the latter is to be obtained a few minutes after leaving Brigsdal, and it is unforgettable. The blue ice of the perpendicular side towers above the birch-trees and alder bush fringing the lake, and seems to rise straight and steep within an inch of the green foliage. On approaching it, however, the visitor will find that a field of stone and moraine rubble separates the two, and will have to be crossed before the foot of the glacier is reached. But the trouble of climbing will be amply repaid by a closer glimpse of the ice-cavern, one of the finest of its kind, and out of which the stream flows which nourishes the moraine lake.

The Brigsdalbrae, or glacier, is the steepest offshoot of the Jostedalsbrae, and is a long, winding mass of ice. On the right, and at a much higher level, lies the Kjötabrae, from which waterfalls drop hundreds of feet, and huge blocks of ice fall with a crash, similar in sound to the echo of musketry heard in an Alpine valley at the foot of a bare cliff. The Brigsdalbrae was first ascended fifteen years ago by G. K. Bing, who thus reached the Jostedalsbrae, which has an area of five hundred and eighty square miles.

CHAPTER XXIV.

By DOUGLAS SLADEN, Author of "The Secrets of the Vatican."

Secular Rome—General Sketch.—Rome, the Eternal City, might as fitly be called the City of Eternal Change. In the last two years it has had changes enough for two centuries. Wide tracts of the city have been torn up to free ancient monuments from the excrescences which smothered their noble proportions. Many vast modern buildings have been erected, one among them, the new Capitol, the finest building in the Classical style since St. Peter's arose at the command of the mighty pontiffs of the Renaissance. Until a year ago the dome of St. Peter's was the first object which struck the eye from every eminence in Rome, as it was the first object which struck the eye of the traveller approaching Rome. While this was the state of things, it was not easy for people to forget that Rome had been the Capital of the Pope, who keeps himself a prisoner in the Vatican. It was a wise strategical move of the present authorities to make the Capitol once more the outward and visible centre of Rome, as it was in the days of her ancient glory. So they reared on the site of the Temple of Juno *Moneta*, the ancient Treasury of Rome, which gave money its name, the gigantic new monument to the Second Italian Renaissance, the Unification of Italy, with the enormous equestrian figure of Victor Emanuel, which is so large that a dinner-party has been given inside it, as its central feature.

Photo by] [*H. C. White Co.*

THE FORUM, ROME.

A bird's-eye view of the great centre of Roman life. In the distance is the Colosseum, while nearer to the spectator is the Arch of Hadrian. From there the Via Sacra can be traced until, in the foreground of the picture, it passes between the Basilica Julia (to the right) and a row of columns on the left, chief of which is the Column of Phocas in the centre of the picture

You can see the new Capitol as you stand in the flat Piazza del Popolo, just

inside the great North Gate of Rome a mile away—the Corso, the chief street of Rome, runs from one to the other, and you can see the Capitol for every step of the way. It is built of white Brescian marble at the head of the finest flight of steps in the world, which fill an entire side of the great Piazza di Venezia. It is built in the form of an ancient temple in a huge crescent, to follow the outline of the hill, and is one of the grandest buildings of modern times. While it was completing this building, the Government cleared away a mile of mean and uninteresting houses between the Palatine, the Cælian and the Baths of Caracalla, so as to give their noble ruins a proper setting of turf and trees; and cleared away the excrescences which concealed the ancient features of the vast buildings of the Emperors, the mighty tomb of Hadrian, now called the Castle of Sant' Angelo, and the Baths of the Emperor Diocletian. At the same time, for the exhibition of 1911, they made enormous erections, some of which, like the huge palace of the Fine Arts and the Zoological Gardens, in which the wild animals are confined by natural features instead of cages, are permanent, while others, like the reproductions of mediæval buildings on the Campus Martius, are of a more temporary nature.

Photo by permission of] *[F. E. Whiting.*

THE COLUMN OF PHOCAS.

Rome is not rich in the work of the Byzantines, except in the mosaics of its churches, and it has not much of the Romanesque beyond an old inn which was standing when Boniface VIII. made the year 1300 the first Jubilee for pilgrims. The seventeenth century Cardinals waged such fierce war on Gothic architecture as the symbol of the hated Northern Protestants, that nothing survived them except the grand old palace called the Torre dell' Anguillara and a few houses in Trastevere, and on this side of the Tiber the Palazzetto Mattei, a few arches in the old Aracœli church, a few windows in superannuated palaces, and the bastard S. Maria sopra Minerva.

Nor is it amazingly rich in works of the true Renaissance, though the Palazzo and Palazzetto Farnese, the Villa Farnesina, the Villa Madama and the Villa Medici have dignity and elegance, and there are some notable Renaissance churches like S. Maria del Popolo, richly dowered with paintings and sculptures of the great masters, Sant' Agostino, Santa Maria della Pace and San Salvatore in Lauro (cloister).

Rome excels in two classes of churches, one mediæval and one Post-Renaissance. A few of its churches are frankly ancient Roman buildings converted, such as the most perfect of its many temples, that which pervades literature since the Augustan Age as the circular Temple of Vesta, a name of which it has been deprived by modern criticism, the Temple of Fortuna Virilis, an elegant rectangle, the vast circular Pantheon, which formed part of the Baths of Agrippa, the vast circular San Stefano Rotondo, which was a meat market, and the octagonal S. Costanza, which was the tomb of Constantine the Great's daughter. There are others in crypts like those of San Clemente and St. Nicola in Carcere.

Among the Post-Renaissance churches St. Peter's stands far the first, being the greatest of all the churches of the Classical Revival. There are other huge Classical churches in Rome; they have neither the majesty nor the charm nor the sincerity of St. Peter's.

Photo by] [*E. G. Wood.*

THE ARCH OF SEPTIMIUS SEVERUS.

This arch is the first object that holds the attention of the visitor to the Forum. It is constructed entirely of marble, and was erected to the honour of the Emperor and his sons Gaeta and Caracalla. Notice the old Roman pavement of the Via Sacra.

Photo by] [E. G. Wood.

THE TEMPLES OF SATURN AND OF VESPASIAN.

From the earliest time the Temple of Saturn (of which eight columns are still standing) was the depository of the public treasury. The Temple of Vespasian is particularly noted for its beautiful pillars.

This is only the briefest sketch of the architecture which makes Rome immortal. All said and done at Rome, you have to go back to ancient Roman buildings, and the basilicas inspired by them, to be enchanted. Nowhere is there such a pomp of walls and gates and towers, of columns that soar like steeples, and are covered with bas-reliefs to their summits ; of sculptured arches ; of temples with columned porches ; of houses of nobles, which have been preserved for us in the bosom of the earth ; of aqueducts looking like the works of God—all going back to the days when one man, robed in purple on the Palatine, was a god on earth, and the Emperor was recognized as such. And among all the grandeur of Ancient Rome, which is preserved in the city to-day, certain piles of architecture stand up like mountains, rising from a plain—the Forum, the Colosseum, the Palatine, and the Baths built by Caracalla and Diocletian to serve an entire city.

Tiberius had a passion for privacy and his successors were in constant dread of assassination, so they threaded the Palatine with wonderful subterranean passages, some of great depth, some of enormous extent. The Cryptoporticus, which preserves remains of its mosaic floors and was once covered with exquisite stucco bas-reliefs, was the scene of the murder of Caligula, who took the most elaborate precautions of them all against assassination. It extended right across the Palatine from the Forum to the Circus Maximus.

The monuments of the Palatine have suffered very severely. It is difficult to make out what most of them were ; but one, at any rate of great extent, the Stadium of Domitian, is very clearly defined. It has a running-track of about a quarter of a mile, and preserves the tradition of the ancient Stadium better than any ruins which survive. In the background is the famous Palm-tree of the Palatine near the Church of S. Bonaventura. Above, on the left, is the Villa Mills, which is

now in the process of demolition, as it stands on the top of a palace of Augustus, which, in its turn, was built upon the palace of Hortensius.

The Belvedere of the Palace of Augustus on the Palatine is very picturesque, and, of course, formed no part of the palace. The adjoining garden belongs to the Villa Mills, and was formed a few centuries ago by throwing immense quantities of earth on a portion of the palace of Augustus; so important finds may be expected there. The demolition of the Villa Mills has been arrested by the discovery that considerable portions of the palace are embodied in its walls.

The Pantheon, even if it never was a temple of all the gods, is one of the noblest monuments in Rome. It was built as a portion of his baths by the great and wise Agrippa, the son-in-law of Augustus, whose victories won the Empire for Cæsar's diplomatic nephew. It is a large, circular building, with a hole in the roof, like the most modern theatres, except that there is nothing to cover it up in cold or wet weather. The legend is that it was once the temple of all the gods, and that Our Lord was included among them. It is now the Westminster Abbey of United Italy, in which only her kings may be buried. But Victor Emanuel II. and Humbert I lie in good company, for Raphael is buried there side by side with Maria Bibbiena, the Cardinal's niece, who was to have been his wife.

In appearance the Pantheon is a vast circular building of brickwork restored in the time of Hadrian, surmounted by the dome which gave the dome-builders of the fifteenth century the inspiration that flowered in Brunelleschi's Dome at Florence (Santa Maria del Fiore), and in the dome of St. Peter's. But the noblest portion of it is the huge portico, little spoiled, which still bears the name of Marcus Agrippa, the son of Lucius the Consul, who had it made. It stands

Photo by] [*J. W. McLellan.*

THE HOUSE OF THE VESTAL VIRGINS.

Here lived the Vestals, maidens who devoted their lives to service for the goddess and in the temple of the undying flame. Their palace was very large and beautiful. The statues are those of some of the chief Vestals.

right in the heart of Old Rome; the Piazza of the Pantheon is as typical a piece as the stranger can visit.

The Basilica of Constantine is an appropriate subject to follow the Pantheon, because Michelangelo's idea for the new St. Peter's was to put the dome of the Pantheon on the top of the Basilica of Constantine. It is a gorgeous mass of old red brick built by Maxentius, the brave and defeated rival of the plausible and vacillating Constantine, who partly owed his empire to his alliance with the Christians, the Socialists of his day. The great arches shown in the picture are nearly a hundred feet high and a hundred feet wide. The ceiling is formed of concrete and weighs thousands of tons. On its front are arranged some of the finest specimens found in Rome of the old purple Egyptian porphyry. It stands at the eastern end of the extension of the Forum,

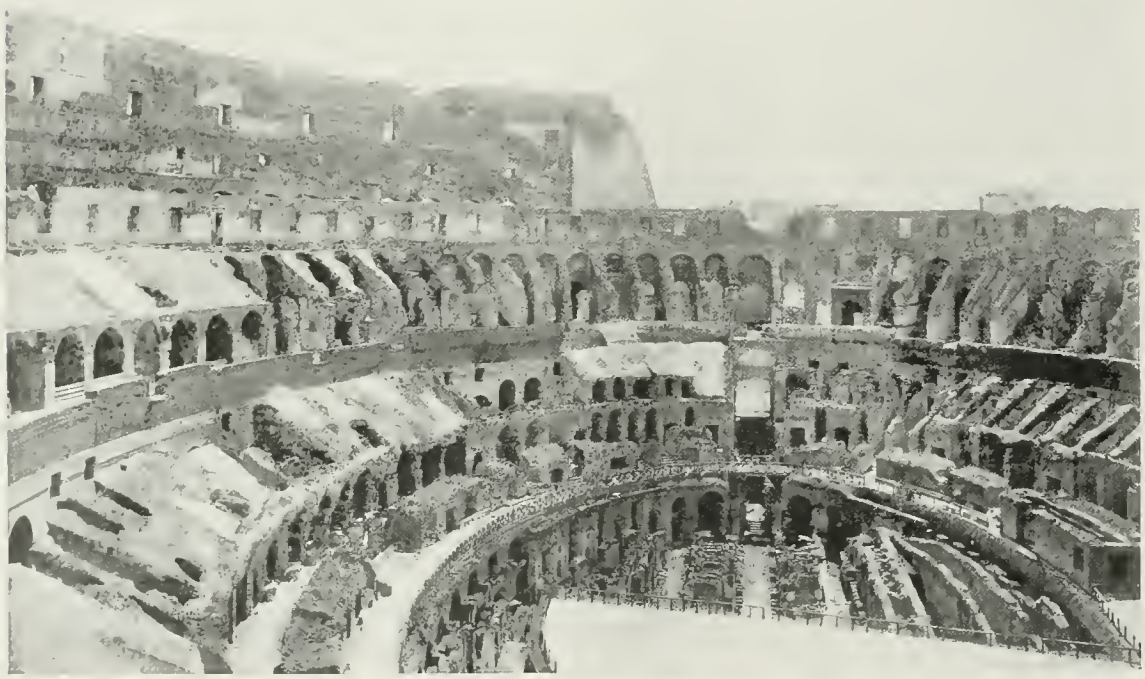

Photo by] [*The Photochrom Co. Ltd.*

THE INTERIOR OF THE COLOSSEUM.

All the marble seats which filled this vast auditorium have been taken away at various times to provide building material for Rome's many palaces. The excavated part of the arena shows the dens for the wild beasts, which were located beneath the stage.

adjoining the church of the most popular saint of Rome, the gentle St. Francesca Romana, and the site of the great temple of Venus and Rome, which was, in its day, the finest of all the temples of the Imperial City.

The Forum Romanum is, with the exception of the great Temple of Karnak, in Egypt, the most wonderful mass of ruins in the Western world, and it possesses an interest not possessed by Karnak, because Egypt never affected the West directly, and the Forum was the workshop of Rome, in which religion, law and civilization, as we have them to-day, were forged. The Forum is not only wonderful, but wonderfully beautiful, especially towards evening, when the glare of the sun, setting behind the Palatine, pours in unearthly radiance on the Colosseum, and the Arch of Titus, and the whole eastern end of the historic valley. For the Forum is a valley lying between the Palatine, the Capitol, a flank of the Quirinal, and the Esquiline; the place to which the Romans and the Etruscans and the Sabines could come down from their entrenchments on their

Photo by] *[H. C. White Co.*

THE COLOSSEUM.

This splendid monument, which by the Romans was called "The Flavian Amphitheatre," is built of tufa, an abundant building material quarried in the vicinity of the city. During the gladiatorial shows which frequently took place here, the whole building was roofed with a striped purple and red silk covering, unrolled on long masts, the sockets for which are still to be seen on the walls.

THE COLOSSEUM.

A view showing the gigantic proportions of the structure, which is in the form of an oval, measuring 205 yards by 170 yards. The walls are pitted with holes, where the iron bolts have been taken away to be used elsewhere, for iron was difficult to procure during the Middle Ages.

separate hills to do their marketing and sacrificing to the gods. It still contains vast remains of the law courts, built by Æmilius Paulus and Julius Cæsar, the Palace of the Vestal Virgins, the Fountain of Juturna, the remains of the Temples of the Twelve Gods, Saturn, Vespasian, Peace, Castor and Pollux, Antoninus and Faustina, Julius Cæsar, Vesta, and Romulus Augustulus, and adjoins the Temples of Augustus and Jupiter Stator, and the Senate House of Diocletian and the Archive-House of the Republic. It was the market-place and the chief place for temples from the earliest times. But until the time of Julius Cæsar it only went about as far as the three columns of the Temple of Castor and Pollux, shown in the picture. He added the eastern portion, terminated by the Arch of Titus, and filled with the Palace of the Vestal Virgins, the residence of the Pontifex Maximus, various rows of shops, and the old prison going back to Republican times, which is now being excavated.

At the far end of the illustration is the Colosseum, in front of which are the three arches of the Basilica of Constantine, the little round temple of Romulus Augustulus, the grand mass of the temple of Antoninus and Faustina, which will shortly be free from the church inside it. In front of that are the remains of the Basilica of Æmilius Paulus, and at this end the arch of Septimius Severus.

In front of the picture on the right-hand side is the Basilica of Julius Cæsar ; behind that, in succession, are the three columns of the Temple of Castor and Pollux, the Fountain of Juturna, the Palace of the Vestals, and, right at the back, the Arch of Titus. Towering over the right-hand side of the picture from the Temple of Castor to the Arch of Titus is the Palatine Hill, one of the most splendid masses of ruins in Rome, embosomed in dark ilex trees in front, and embowered in roses behind. Much of its top is covered with the palaces of the Cæsars, with the scanty remains of a few temples, the citadel of Romulus and the house of the mother of Germanicus. This house

is immensely interesting because it is so well preserved and belongs to the day when Our Lord was walking on the earth.

Both the Forum and the Palatine, as is natural, abound in picturesque legend and history. At the Fountain of Juturna, for instance, terraced with fair white marble in the days of the Emperors, Castor and Pollux watered their milk-white steeds after the battle of Lake Regillus. A depression in the Forum marks the spot where Marcus Curtius leapt fully armed on his charger into the chasm which was to close when the greatest treasure in Rome had been thrown into it. The core of a temple with a laurel grove inside it stands just behind the spot where Mark Antony delivered that oration over the body of Cæsar. By the Shrine of the Drain-Goddess, in front of the Basilica Æmilia, Virginius killed his daughter, to save her from the mighty Appius Claudius; and near the Arch of Septimius Severus was the Comitia, where the ancient Romans passed their laws.

On the Palatine is the cave of the Wolf which suckled Romulus and Remus, and the secret passage in which Rome's bloodiest emperor met his end. While in the ruins of the Court School, on the farther face, was found the famous stone incised with the ass-headed caricature of Our Lord on his Cross. There is an odd explanation for this. The Jews valued the ass so highly as a water-finder in the desert that the Romans thought they worshipped it, and it was because Our Lord was a Jew, and in allusion to this, that the boy caricatured it and gave the Crucified Saviour an ass's head. The Forum and the Palatine are infinitely the most interesting parts of Rome.

The Temple of Vespasian has no particular interest; it is merely a fine architectural fragment, and not very perfect. The temple with low columns behind it is the Temple of the Twelve Gods, whose principal feature is the record of its restoration by Pius IX. The large Temple of Saturn, on the other hand, is not only one of the finest surviving pieces of ancient Roman architecture in Rome,

Photo by] [*Anderson & Co.*

THE ARCH OF CONSTANTINE.

The most elaborate of the three triumphal arches of Ancient Rome. Portions of an earlier arch have been built into it. It was converted into a castle during the tenth century, and afterwards belonged to the notorious family of the Frangipani.

THE ARCH OF TITUS.

A beautifully-proportioned specimen of Roman architecture. On the inside of the arch are bas-reliefs showing the triumphal procession which took place after the fall of Jerusalem, and the trophies of showbread and the seven-branched golden candlestick carried in triumph.

it is of high interest because its vaults, only partly laid bare, formed the Treasury of the Republic, and in front of it are the remains of the Golden Milestone. The grass round its columns is ablaze with irises in spring and the deep-hued Sicilian marigolds later. The Via Sacra, up which the Consul wound to the Capitol at the head of his armies when he was accorded a triumph, runs right underneath the Temple of Saturn. Its columns are monoliths. The slope on the right hand of the picture leads up to the Capitol, on which there are no ancient Roman buildings, except the Tabularium, surviving, it being given up to the Municipality and the two museums designed by Michelangelo, the old Aracœli church and the gigantic new Capitol erected as a monument to United Italy.

The Arch of Septimius Severus is the first object in the Forum upon which the eyes of most visitors fall. Its sculptures are not among the best in Rome, but have the advantage of being clear and well-preserved. The building showing through the arch is the ancient Senate House of Rome, last rebuilt by Diocletian; but it is unfortunately at present occupied by Spanish monks, and its crypt, which contains many remains of the ancient Senate House, whose façade is almost unaltered, is sealed up. The Comitium was held right in front of it.

The Arch of Titus is one of the least ornate and the most elegant of Roman arches. Its silvery form at sunset, or by moonlight, is strikingly beautiful, but it owes its celebrity to the representation of the sacred emblems of Judaism, brought to Rome by Titus for his Triumph, which, after many vicissitudes, such as being carried to Carthage and back, were finally lost sight of in the dark ages which followed the break-up of the Roman power. Its position is a very appropriate one, for Titus built the Colosseum with the labour of the captives taken in the Jewish wars. On the left of the arch are the beautiful gardens of the Palatine, and in front are fragments of the colossal columns of the Temple of Venus and Rome.

About the same distance from the Colosseum as the Arch of Titus is the Arch of Constantine, one of the most perfect and ornate of the great arches of Imperial times surviving in Rome. Its merit is of varying quality, because Constantine used the materials of an earlier arch of far better workmanship than his men put into the new part. The Via Sacra passed under it, and has been laid bare in recent excavations. The gigantic statue of Nero, which gave the Colosseum its name, stood in the angle between it and the Colosseum. The Colosseum was built on the site of the Lake of the Golden House of Nero, who had visions of putting up a building so vast that it would unite the Palatine and the Esquiline into a single hill.

The Colosseum, called by the Romans the Flavian Amphitheatre, was erected by Vespasian and Titus, and is one of the most magnificent buildings in the world. Several of the largest buildings in Rome have been constructed with stone stolen from it and yet half of it is entire. Sentimentally, it is not so interesting as Papal tradition would have us believe, for the chief martyrdoms of Christians did not take place in the Colosseum, but in the Circus Maximus and the Circus near St. Peter's. However, Commodus used to go down into the arena to kill some of his subjects to amuse the rest. The full-page illustration gives the best view, except that it does not show the most perfect portion; for in it you can see where the stones were stripped for the other buildings, and behind the Colosseum rises the splendid mass of the Lateran with its statues standing out clear against the sky, while in front of it is one of the remaining apses of the great Temple of

THE AQUEDUCT OF CLAUDIUS.

Rome was supplied with water by means of a system of these gigantic aqueducts. The Claudian aqueduct was forty-two miles long, and brought water from the neighbourhood of Subiaco, and finally another aqueduct, the Anio Novus, was built upon the top of it.

Photo by] [*J. W. McLellan.*

THE STADIUM.

At one time supposed to form an arena for athletic games, this splendid court is now identified as having been a pleasure garden of the Emperors. The semicircular formation in the foreground is the base of a large white marble fountain. Many beautiful pieces of sculpture were discovered here.

Venus and Rome, and on the right is the last spur of the Cælian, now the Garden of the Passionist Fathers, supposed by some to have been occupied by the Vivarium, where the wild beasts were kept alive for the gladiatorial shows. The dimensions of the Colosseum are gigantic. It is built of the white Roman travertine, which is almost as beautiful as marble, and the oval measures two hundred and five yards by one hundred and seventy yards. The perfect portions of the walls are one hundred and fifty-seven feet high, and the whole of this gigantic ellipse was covered by an awning suspended from masts whose sockets still remain.

The interior of the Colosseum is very interesting and very ugly. Half of the arena has been excavated to show the dens in which the wild beasts were kept, the grooves for the elevators in which they were sent up, and the like. The auditorium has been stripped of its seats to provide building materials for the friends of various Popes. Not one marble seat remains in its place, but the caretaker tells you glibly where the Emperor's seats and the seats for the Vestal Virgins and Senators used to stand. The interior still shows traces of various chapels which were fitted up in the ruin, but does not give much indication of the days when it was a castle of the Frangipani. The view from the top is extremely fine, one of the best in Rome. In the good old days of Pius IX., when the grass grew in the streets, the Colosseum was the most glorious tangle of wild flowers imaginable. They have been cleared out with too severe a hand ; the Colosseum now looks as if it had been scrubbed and sand-papered for a visit of the German Emperor. I remember well the authorities of Taormina clearing the wild flowers out of the Theatre for this oppressive honour. There are many owls living in the Colosseum, but on moonlight nights you cannot hear their screech for the confidences of the Americans. The arena of the Colosseum is open night and day, and it is one of the few free shows of Rome. The Colosseum could accommodate from fifty

thousand to eighty thousand people, and it was opened with gladiatorial shows which lasted for a hundred days.

The Baths of Caracalla form one of the most wonderful masses of ruins in Rome. They cover a wide area and are of enormous size. Once upon a time the ruddy brick of the ruins was covered with a veneer of precious marbles. Many fragments of the gorgeous mosaics in precious porphyry, serpentine, and yellow African marble, still line the gigantic halls, as uneven as the floor of St. Mark's at Venice. The use of these baths was free, and besides hot and cold bathing pools, and all the other adjuncts necessary for the bath, there were a running course and a library and a stadium. A few years ago the ruins were as naked as the Colosseum, but better taste has prevailed, and now wild vegetation is allowed to take its part in the scheme of beauty. The Baths of Diocletian, which now house the National Museum, covered much more ground and are much more perfect. A good many of their chambers still preserve their roofs, and the principal chamber with comparatively slight changes was adapted by Michelangelo into the transepts of the Church of S. Maria degli Angeli. The Baths of Caracalla are, unfortunately, rather far out—nearly a mile beyond the Palatine, and there is no tramway which serves them. They are close to the Porta S. Sebastiano, the gate for the Via Appia.

The Romans buried their dead on each side of the principal roads leading out of the city. Far the most ancient and important road of Rome was the Via Appia, leading up from the southern ports, so its sides became the favourite cemetery. An immense number of tombs border it still—none of them perfect, but some of them considerable and interesting. The most striking of them all, on account of its enormous size, is the tomb of Cæcilia Metella. It was built for the wife of the Younger Crassus, son of the Triumvir, who was the richest Roman of his

THE CRIPTOPORTICUS OF TIBERIUS. THE PALATINE.

This covered passage was tunnelled underneath a fish-pond or piscina, the damp from which has stained the stucco ornamentation. It led to an open space in front of the Imperial Palace.

day. In the thirteenth century the Gaetani turned it into a castle. Close by it is the fine Circus of Maxentius. The drive along the tombs of the Via Appia is the favourite tourist-drive of Rome. The Catacombs of Saint Calixtus, which are the most visited, are on it, a mile and a quarter from the city gates. The tombs of the Appian Way are a landmark on the Roman golf-links, which lie between it and the Claudian Aqueduct, out on the Campagna. The tombs of the Latin Way, the next of the great roads eastwards, are far more interesting—two of them—than any on the Appian Way. They are rather in the Etruscan style and have a chapel or feasting room above and tomb-chambers below. These contain the best stucco bas-reliefs which are left *in situ* anywhere near Rome. This part of the Campagna is rather a disappointing place for wild flowers.

The Claudian Aqueduct is one of the most beautiful of the monuments of ancient Rome. It is of great height, splendid masonry, and immense length, and in the spring its base is buried in violets every here and there. Rome was supplied with water by a series of these great aqueducts radiating into the city from the Campagna, to carry the waters of the Anio and other neighbouring rivers into Rome. Some of them are still in use and supply very pure water. Towards sunset the great black skeletons of these ancient aqueducts, stretching across the Campagna, form a marvellously impressive sight. The Aqueduct of Claudius, made by the Emperor of that name, A.D. 52, was forty-two miles long, and another aqueduct, the Anio Novus, was built on the top of it.

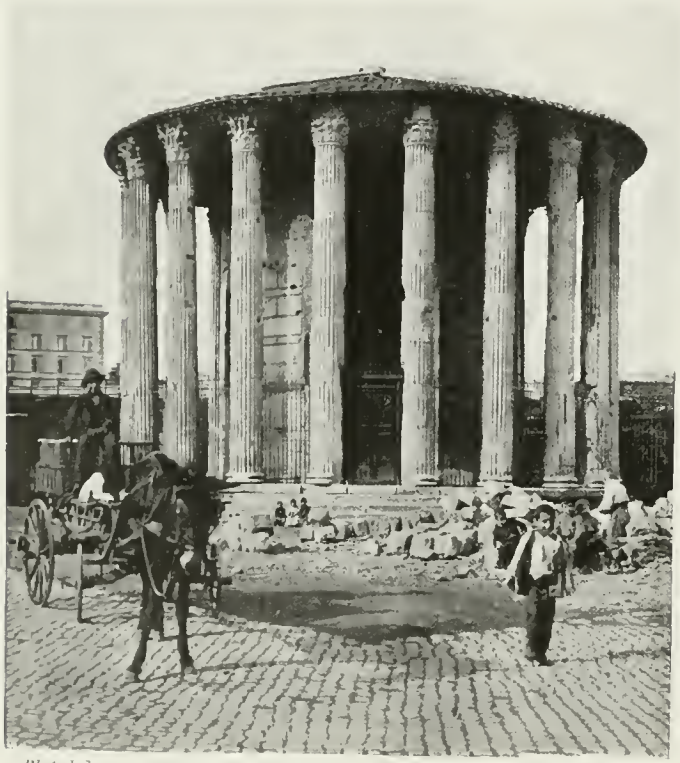

Photo by] [*H. C. White Co.*

THE TEMPLE OF VESTA.

Known, though for insufficient reason, by this title, this beautiful little temple is one of the best preserved relics of ancient Rome. It is built entirely of marble, a fabric which enhances the beauty of its twenty Corinthian columns.

The House of the Vestal Virgins is interesting rather than beautiful, though as the summer draws on the China roses round the pools with their flaming crimson blossoms relieve its bareness. The chambers of the Virgins are not complete enough to convey much to the ordinary visitor, but the buildings are quite extensive and are adorned with some of the statues found in them. The position of a Vestal—that is, one of the six priestesses who attended to the shrine of Vesta, the Goddess of the Sacred Fire—was the most honourable to which a Roman woman could aspire. But it involved strict celibacy, and if one was found to be unchaste she was buried alive. One such was exhumed in the last century on the premises of the British Embassy, and that may have been their execution ground.

The most central fact in the Roman religion was the keeping alive of the sacred fire in the Temple of Vesta in the Forum. Unfortunately nothing remains of the temple but its rubble core —a mass of concrete rudely circular in form. The dear little shrine beside it, an angle with a single column, is not the Temple of Vesta, and probably had nothing to do with it. It seems to have been put up for the convenience of photographers. The other so-called Temple of Vesta, ascribed by scholars to Hercules Boarius, the God of the Ox-Market, stands in the ancient

Photo by] *[H. C. White Co.*

THE BATHS OF CARACALLA.

The magnificence of these baths was unparalleled even amongst a nation of luxurious bathers. They were begun in A.D. 212 by Caracalla, and were finished by Alexander Severus. The number of baths in the building was 1,600

THE APPIAN WAY.

Photos by] [*J. W. McLellan.*

THE BELVEDERE ON THE PALATINE HILL.

The upper photograph gives a view of Rome's famous street of the Dead, with the huge tomb of Metella on the left. The lower is a beautiful spot in the gardens of the House of Augustus.

Ox-Market near the Bocca di Verità—the stone face which bites the hands of liars. It is one of the most beautiful objects in Rome in spite of its job-roof. Miniature representations of it in bronze are sold in every knick-knack shop as inkpots.

The Column of Trajan in his Forum, like the Column of the Antonines in the Piazza Colonna, is covered with bas-reliefs up to the base of the statue of some saint promiscuously erected on it. The bas-reliefs represent Trajan's famous Dacian Expedition. A few years ago his tomb was discovered underneath it, but it contained nothing. I saw it and I have been to the top of the column by the easy staircase inside. The sunken area, in which it stands, now given up to diseased and ownerless cats, forms only a portion of the vast Ulpian Basilica and Libraries. This white and beautiful column is one of the landmarks of Rome.

The Vatican.—For a parallel to the Vatican, with its thousands of chambers, (variously estimated at from thirteen thousand to twenty-seven thousand, according to the type of chamber included), and its thousands of inhabitants, culminating in the semi-divine head of a religion, one must go to Asia. Europe has nothing to match it, though the Louvre covers an actually larger space of ground and Mount Athos has more inhabitants.

Here lives the aged Pope himself; here for the most part live the Cardinals of his Court, the Cardinals who are at the head of great institutions like the Inquisition; here for the most part live the rest of the Papal Court, who carry on the business of the Vatican as the centre of the Roman Catholic religion, and a legion of minor ecclesiastics and servants who are necessary to the maintenance of the Papal Court and its treasures.

For it must not be forgotten that the Vatican is an expression with two very different meanings. There is the Vatican which contains the Papal Court and stands for the Papal system as the Sublime Porte does for the Ottoman Empire; and there is the Vatican which is the grandest series of museums in the world. As the British public knows the Vatican chiefly by its museums, they must be taken

here before any account is given of the Papal Court and the growth of the Vatican buildings.

The Pope lives in one of the most undesirable parts of his palace. It may or may not be true that he occupied a tiny room with a southern aspect in the hot weather of 1911; it might be a good thing to do it in the winter. In any case, the Papal Apartments are in the block built by Sixtus V., over the right-hand side of the colonnade depicted in the picture. Raphael's *loggie* run round the open quadrangle adjoining; the celebrated Bronze Door is at the left-hand end of the right-hand colonnade. The Sixtine Chapel shows its roof between the Vatican and St. Peter's. Formerly one entered the Sixtine Chapel through the Bronze Door and Algardi's Staircase; now one has to go all round the back of St. Peter's and through the Sculpture Gallery—an ordinance of the Pope which imposes a maximum of inconvenience and expense on the innocent sightseer. The Bronze Door is the best place for seeing the Swiss Guard, whose guard-room is just inside.

The Vatican Gardens, which you pass on your left going up to the entrance of the Sculpture Gallery, are of great extent and contain part of the Leonine Wall and Observatory, a fac-simile of the Grotto of Lourdes, and various groves, classical gardens and fountains. They are built into the bastions of the city wall and are, therefore, very lofty and imposing. The most charming thing in them is the summer pavilion of Pope Pius IV., the scene of many gorgeous festivities, on which the curse of malaria now rests.

The Vatican was never included among the Seven Hills, though it was called the Mons Vaticanus. In classical times it was celebrated for the badness of its wine and the badness of its air. On the flat ground below it the great Lucius Quinctius Cincinnatus had a farm of four acres, which was called the Prata Quinctia, and the district has retained the name of Prate to this day. The curly-haired Cincinnatus

TRAJAN'S COLUMN.

was ploughing when the envoys saluted him as Dictator. The Vatican owed its importance to the Circus which Caligula established on the Cornelian road almost on the site of St. Peter's. Nero was fond of baiting Christians here to amuse the populace, and one of them was St. Peter, whom he crucified for making the magician whom we know as Simon Magus fall when he was flying (perhaps with some species of aeroplane) by his will-power. As the Romans always buried people beside a road leading out of the city, St. Peter was buried on the Via Cornelia, which decided where the cult of Christianity should take root. The site of his execution is between St. Peter's and its sacristy, on the place where the obelisk which is now in the Piazza of St. Peter's used to stand. Constantine the Great built one of his six basilicas over the tomb, but the founder of the Vatican Palace is generally considered to be Pope Symmachus (498–514). The two great Popes, Innocent III. and Nicholas III., largely increased the Palace, and as it was outside the city in a very strong position, it continued to grow until, about a thousand years after Pope Symmachus's time, Nicholas V., the founder of the Vatican Library and one of the chief founders of the Renaissance of Greek learning, conceived the idea of making the Vatican the Palatine of the Popes—a palace that should be a city and contain the finest library in the world; which for manuscripts it still is. The memory of Nicholas V. is enshrined in the exquisite little chapel which he commissioned Fra Angelico to fresco for him.

Photo by] [*J. W. McLellan.*

THE CASTLE OF SAN ANGELO.

Originally erected by Hadrian in A.D. 136 as a tomb for himself and his heirs, this splendid monument, once encrusted with marble, was afterwards converted into a fortress and has suffered many sieges during the troublous times it has passed through.

Not content with making the Vatican the hill of palaces, he espoused Alberti's idea of taking down the exquisite and venerable but tottering fabric of Old St. Peter's, instead of rebuilding it, and was, therefore, in a way the father of the New St. Peter's. But the present building owes little to him.

The latter half of the fifteenth century saw the commencement of a great building period at the Vatican, for Sixtus IV. (1471–1484) had the Sixtine Chapel built for him; and Innocent VIII. (1484–1492) had the beautiful Casino in the Vatican Gardens, which now forms part of the Sculpture Gallery, built for him; Alexander VI., the execrated Borgia (1492–1503), built the famous Borgia Apartments, frescoed by Pinturicchio; and Julius II. (1503–1513) had Bramante to build the Cortile of the Belvedere, which is twelve hundred feet long, to join Innocent's pavilion on to the palace, and the enormous Cortile of San Damaso, whose *loggie* were frescoed from the designs of Raphael. Leo X. made Raphael architect of St. Peter's. Pius IV., the Medici Pope who was not a real Medici (1559–1565), built the exquisite pavilion in the Vatican Gardens; and Sixtus V. (1585–1590), though he only reigned five years, built the enormous wing of the Courtyard of San Damaso, which has been the residence of the Popes ever since. Pius VI., Pius VII. and Clement XIV. added enormously to the Sculpture Gallery—three of the most unfortunate of the Popes, for Pius VI. and Pius VII. were carried off prisoners by Napoleon, and Clement XIV. was poisoned by the Jesuits. Leo XIII. cleared

Photo by] [*J. W. McLellan.*

THE ROTONDA.

Perhaps this splendid building is better known as "The Pantheon," a title which signifies "The very sacred." The foundation of the building is of the time of Augustus; it is lit by a circular opening in the dome, which once was covered with bronze gilt tiles; but these were removed to Constantinople by Constans II.

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THE VATICAN.

A bird's-eye view of the Palace of the Pope. It is the largest palace in the world, covering an area of thirteen and a half acres and containing about 1,000 halls and apartments.

the books out of the Borgia Apartments and built a new library under the great hall of the Vatican Library (the famous Leonine Library), which now contains all the printed books. And that, in brief, is the story of the building of the Vatican.

Any detailed description of the Papal hierarchy would be out of place here.

The Vatican Sculpture Gallery is without a rival. It contains more fine ancient statues than all the other museums of the world put together. For the Emperors and courtiers of Ancient Rome, with the tribute of conquered worlds flowing into their coffers, had boundless wealth, and spent it largely on the embellishment of their gardens and palaces, called collectively villas, with copies, by the best Greek artists of the day, of the most famous masterpieces of the Golden Age of Greek sculpture.

And the Popes enjoyed Home Rule in Central Italy in the sixteenth, seventeenth and eighteenth centuries, when these treasures were chiefly discovered. Here are the Apollo Belvedere, the Laocoon, the Discobolus of Myron, the Genius of the Vatican, Apollo surrounded by the Muses, the Venus of Cnidus, Apollo the Lizard-killer, the Ariadne and the Meleager; and glorious portrait statues like that of the young Augustus. Here are wonderful statues of wild animals reproduced in something like their natural colours by the use of priceless coloured marbles; and matchless ancient Roman marble furniture—vases, friezes, candelabra, and so on, preserved in the Gallery of the Candelabra and elsewhere. Next to this gallery is that which contains Raphael's tapestries, the wonderful series woven for Leo X. by Flemish artists from the cartoons of the Miraculous Draught of Fishes, and so on, which we have here in England. There are thousands of antique statues in the Vatican, and an unequalled collection of ancient inscriptions.

Hardly less valuable for the study of ancient Art is the famous Etruscan Museum of the Vatican, which, besides the marvellous gold jewellery of the Cerveteri Tombs, contains a wonderful collection of Etruscan bronze furniture, taken from other tombs; sculpture and paintings, and the world's grandest collection of Greek vases and bowls, most of them discovered in the Etruscan cemetery on Prince Bonaparte's estate, which embraces the ancient Etruscan city of Vulci.

It is not so surprising as it sounds that the world should owe its chief knowledge of Greek vases to an Etruscan cemetery. For the Etruscan, like the Egyptian, filled his tombs with the domestic articles, to which they had been accustomed in life, for the use of the dead, and the Etruscan was no artist. He preferred to import the beautiful pottery of the Ceramicus at Athens,

though occasionally he imitated it instead, with pitiful results. To these vases we owe much of our knowledge of the life of the ancient Greeks. There is a piece of music on one of them which has been interpreted and published in our notation.

The Egyptian Museum of the Vatican is not comparable to the Etruscan, because, though the Egyptian religion was so popular in Imperial Rome, there were not many Egyptian temples and mausolea on Italian soil; and the Vatican collection consists almost entirely of things found in Italy.

The articles found in the Catacombs and at Ostia are in the Christian and Profane Museum of the Vatican Library.

The Vatican Picture Gallery contains few pictures compared to the great galleries of Florence or Milan, though some of them, like the "Transfiguration," are among the greatest pictures in the world. It was this picture upon which Raphael laid his last brush in the breezy room at the angle of the Borgo opposite the Palazzo Giraud, where he breathed his last. It was this picture which the Romans carried in the funeral procession of him for whom the proverb might have been coined, "whom the gods love die young"—Raphael, the type of the beauty of Italian youth, who preserved his immortal youth till his dying day.

Even reckoning this picture and the "Madonna of Foligno," painted by Raphael for the adorable Convent of Countesses in that city, which is still one of the most unspoiled bits of the Middle Ages, the Pinacoteca yields altogether in importance to the Sixtine Chapel and Raphael's Stanze.

Raphael's Loggie, nicknamed "Raphael's Bible," were designed by him, but his hand is not much apparent in their execution. One derives more pleasure from the stucchi of Giovanni da Udine, who, like his master and fellow-pupils, had entered the enchanted cave of the Golden House of Nero when its Pompeian frescoes were newly brought to light.

When you are taken over the Vatican Library, the first thing that strikes you is the almost total absence of books. The reason is that, unless you have a student's order, you are not admitted to the part of the Library which contains the Printed Books. You are merely shown a series of museums. The books are kept in the basement, in the new Leonine Library. The lovely painted chamber, frescoed with imitations of the Pompeian decorations which Raphael's pupils used so much after the discovery of the Baths of Titus, contains nothing but the most famous manuscripts and the presents from various potentates to various Popes, mostly

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THE VATICAN LIBRARY.

Founded in A.D. 1540 by Pope Nicholas V., this library is now a treasure-house of priceless manuscripts which number over 34,000. It contains besides hundreds of thousands of printed volumes.

very large, bright blue or bright green porcelain, with the portrait of the Pope or the potentate in a vignette. The principal French and German factories vied with each other in producing these *tours-de-force*. The manuscripts, however, are marvellously interesting. There is no such collection of classical manuscripts in the world, and some of the mediæval manuscripts are of the highest interest or beauty. Here is the palimpsest of the *Republic* of Cicero; here is the Dante with miniatures by Giulio Clovio; here is the MS. volume of Henry VIII.'s love-letters to Anne Bullen. Here is a printed book of Henry VIII.'s *Assertio Septem Sacramentorum* against Martin Luther. He did not write it; he merely signed it, and was rewarded by the title Defender of the Faith which he so shortly afterwards crumpled up like an old letter. Here is the forged prayer of Martin Luther. Here is the famous Urbino Bible, which belonged to the great Duke Frederick of Montefeltro, and a manuscript of Dante in the beautiful hand-writing of Boccacio, who signed it "John of Certaldo." The Christian Museum attached to the Library contains human hair and other articles taken from the Catacombs. The Profane Museum has the famous Nozze Aldobrandini, the best of all antique frescoes. The pleasure of a visit to the Vatican Library is spoilt, because you are hurried through it by a human parrot who cares more for the potentates' vases than anything else in his charge.

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THE SIXTINE CHAPEL.

Certainly this is the most famous chapel in Christendom, and it is worthy of its fame. The great Italian artists have adorned walls and ceiling with frescoes of unparalleled magnificence.

The Sixtine Chapel calls up varied emotions in the pilgrim of Art. Here Michelangelo executed nearly all the painting which has survived from his brush, and with it the greatest sculptor of the Christian era rivalled the greatest work of the greatest painter. His "Last Judgment," since some of its nude figures were tailored by Daniele da Volterra to please a prudish and prurient Pope, needs an artist to appreciate it. It simply confuses the eye of the Philistine, but the roof is above all criticism. It has the Bible re-written in paint on its ample spaces, with figures of the most commanding majesty and faces whose expressiveness awakes the despair of other artists. His prophets, his sibyls, and some of his scenes from the Pentateuch are to painting what the frieze of the Parthenon is to sculpture. On each side of this chapel are half a dozen great frescoes by the greatest of the real pre-Raphaelites—Perugino, Pinturicchio, Ghirlandaio, Botticelli, Cosimo Rosselli, and Luca Signorelli, some of them among the highest flights of these masters. For the diapered wall below Leo X. commissioned Raphael to execute his immortal tapestries.

So far the note has been one of exultation, but the prejudice against Michelangelo's "Last Judgment" will not be decreased by the fact that to receive it the windows on the altar wall and the beautiful fifteenth-century frescoes which surrounded them had to be sacrificed.

The Chapel of Nicholas V., called the Chapel of San Lorenzo, is one of the masterpieces of Fra Angelico, who was never more human or more advanced for his period, though the frescoes here are not quite so suitable for reproduction on gilty postcards as his Paradiso.

The Paoline Chapel has two smoky frescoes by Michelangelo; the Sala Regia was decorated by the orders of an indiscreet Pope of that day with the triumphant representation of the treacherous Massacre of St. Bartholomew, which is put on a level with the Battle of Lepanto, the other chief

By the Photochrom Co., Ltd.

THE JUNGFRAU.

It is the distant view of The Jungfrau that gives to the mountain its charm; for delicate as it is in colouring, and crowned with the dazzling white of snow, yet its girth and height creates an impression of grandeur which nothing can dispel.

THE CEILING OF THE SIXTINE CHAPEL.

One of the masterpieces of the great Michelangelo, who, beginning in May, 1508, took over four years to complete the work. In order to add to its grandeur, the artist has invented, by the powers of his per pective, a gallery of bronze and marble which supports the central panels of the ceiling.

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ST. PETER'S, ROME.

The largest and most imposing cathedral in the world. St. Peter's dominates the great Piazza which bears its name, and humbles the mighty obelisk which was brought from Heliopolis to Rome by Caligula.

motive of the decorations of this hall, but rather belittles that victory. The Sala Ducale is blankly baroque, especially in its central arch.

St. Peter's, Rome.—The chief object on the Piazza of St. Peter's is, of course, St. Peter's itself, which, if it had been left as it was designed, without the hideous and inappropriate upper story over the porch, would have been the most beautiful building of its kind. As it is, the dome is half concealed and the beauty of the porch is lost. The last window but one in the upper story belongs to the Leonine Chapel, where canonizations take place. From it the Pope used to address the people on his election. The back of St. Peter's is very fine and imposing. It suggests what the exteriors of the gigantic Baths of the Emperors—of Caracalla or Diocletian—with which it was designed to compete, were like. But one can never forgive the Popes for pulling down Old St. Peter's to make room for it. Old St. Peter's, if it had been allowed to remain, would have been the rival of St. Mark's; it was full of wonderful mosaics and had a sanctity which the present St. Peter's can never possess. It was almost the cradle of Christianity; it held the tombs of nearly a hundred Popes; Kings and Emperors innumerable had transacted history within its walls; it was the sanctuary of undivided Christendom, whereas the present building was not erected till the more important half of the West had left the Roman Church.

The view from the dome of St. Peter's shows the full beauty of the colonnades with which Bernini surrounded the Piazza, and which form a splendid completion of the vast scheme. In the centre is the obelisk, whose removal to its present position gave Bordighera the right of providing the palms for Palm Sunday. The ropes used in its erection were strained to breaking, when a sailor of Bordighera, disregarding the Pope's orders that anyone who spoke during the critical moment should be executed, told them to throw water on the ropes. Right and left are the famous fountains. The principal object in the background, standing out in dark relief against the huge white mass of the Law Courts and the bridge over the Tiber, is the Castle of Sant' Angelo. This is one of the most celebrated buildings of Ancient Rome. Erected as the Tomb of

Hadrian, the Kaiser Wilhelm II. of the Ancient World, it also once held the bones of Marcus Aurelius, the famous philosopher, whose "Meditations" are in every shilling library. It is a huge circular mass of white stone, surrounded and topped by mediæval fortifications, and it contained an elevator as far back as the days of Leo X., whose stoutness inconvenienced him four centuries ago. All sorts of people, from Beatrice Cenci (who was executed opposite) to Benvenuto Cellini and the astrologer Cagliostro, have been imprisoned in it, and the wicked Alexander VI. found in its security a convenient residence. In honour of the Exhibition of 1911, it was stripped of all its excrescences and had a Conference Temple erected in its grounds. It contains some of the most charming frescoes of Rome, executed by the pupils of Raphael. The Bronze Angel on the top commemorates the apparition of an angel, who descended to stop the plague which was then devastating the city, at the intercession of Pope Gregory the Great.

The Dome of St. Peter's is the loftiest in the world, and the time at which the Pope thinks that visitors would like to commence ascending it is 8 a.m. The ascent is closed at 11 a.m., and can now, as far as the roof, be accomplished in an elevator. The scramble up the dome itself between its two skins is very like the scramble up the Great Pyramid, and you can go right up into the copper ball which sways about under the cross at the top. There are permanent arrangements for illuminating its exterior with Earlscourt lamps. The view from it is not much finer than it is from the roof, but it is a most diverting place to ascend. It is generally supposed by those who have not been there that there is a population of two thousand persons living on the roof of St. Peter's, called the Sampetrini, and occupied with the duties of steeplejacks and sling-cleaners of the ceiling. This is a fiction. There is not a single house on the roof, and the

THE PIAZZA OF ST. PETER'S.

It is difficult to realize the vast size of this Piazza, but comparison with the size of the carriages standing in the shadow of the obelisk will give some idea. The colonnades which skirt the two sides are composed of double rows of pillars to the number of 284.

Photo by] [*E. G. Wood.*

THE DOME OF ST. PETER'S, ROME.

The chief glory of St. Peter's is the beautiful Dome, which was designed by Michelangelo. It has a diameter of 138 feet, which makes it slightly smaller than that of the Pantheon.

Cardinal Secretary of State informed me that no one is allowed to stay up there at night. The roof is large enough for a decent cricket pitch, and the beautiful view from it is shown in another illustration.

The interior of St. Peter's is a mixture of majesty and vulgar pomp. Its conception is magnificent ; it has the spaciousness, the grand arches, the noble piers of the great Baths and Law-Courts of the Emperors. Michelangelo's boast that to make St. Peter's he would put the dome of the Pantheon on the top of the great arches of the Basilica of Constantine in the Forum has been mentioned. The Dome is a far greater triumph of engineering skill than the Pantheon's ; the great arches which support it, the richly-coffered barrelled vaulting of nave and choir, completed by Bramante, are extremely fine. The *loggia* added by Bernini, and the monstrous tabernacle, for which the bronze of the Pantheon was sacrificed by Bernini, who imagined that he was reproducing the glories of Solomon's Temple at Jerusalem, are aldermanic pieces of baroque. The bronze round the Chair of St. Peter at the end of the apse is hardly equalled for banal bumptiousness in the maddest baroque of Sicily.

But for the most part the interior is so colossal that it is empty, and so empty that it has the magnificence of space. The statue of St. Peter is ascribed to the sixth century A.D., and has other merits than those of sanctity. The kneeling figure of Pius VI. in the Confessio in front of the blocked-up entry of St. Peter's Tomb alludes to the most pathetic incident in the history of the Popes. Napoleon deported him to France, where he died, as a sort of prisoner and a plain citizen, in the little city of Valence, where his death is registered in municipal archives as of "one Jean Braschi, who followed the profession of Pontiff." The English people are most interested in Canova's monument to the last three Stuart princes—James III., the Old Pretender, Charles Edward, the Young Pretender, and Henry, Cardinal of York—erected to their memory by George IV., who had given Henry a pension in his life, and at his death received a bequest of what remained of the Crown jewels carried away by James II. in his flight at the Revolution. The mosaic pictures are much admired by the Philistine.

The Crypt of St. Peter's, both in its contents and in the sentiment which it inspires, is one of the most striking things in Rome. It is all that remains of the basilica granted by Constantine the Great to the Pope, and it preserves the actual pavement trodden by so many pontiffs and monarchs. It owes its preservation to the fact that the architect thought it would make the best foundation for the new church. He vaulted it over with low vaults of tremendous strength, and underneath them various objects of the highest interest have been preserved or collected. Here are the plaster sarcophagi, rather like whales, in which the Stuart Princes were actually interred, as wreaths of white roses from the pale twentieth century Jacobite

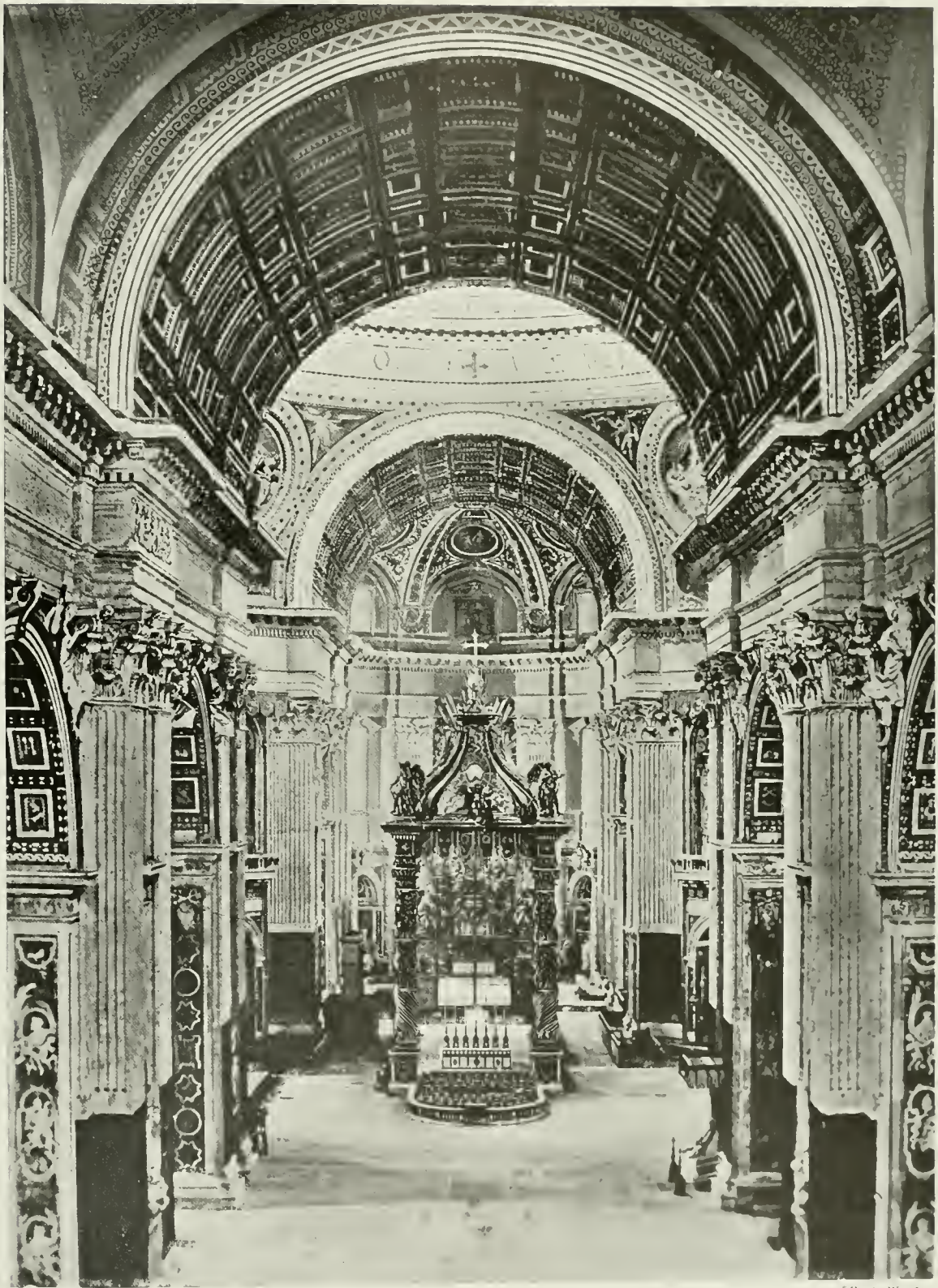

Photo by] *[E. G. Wood.*

THE INTERIOR OF ST. PETER'S, ROME.

So splendidly proportioned is this building that it is difficult to appreciate its huge dimensions; but some idea may be gained by a comparison of the lofty aisle of the cathedral with the life-size figure of St. Peter on the right-hand side of the picture.

testify. Here a rugged stone marks the tomb of Mathilda, the Countess of Tuscany, whose Donation established the Papacy and whose power brought Henry IV. to his knees before the Pope at Canossa. Here are all which have been preserved of the eighty-seven tombs of the Popes desecrated by Bramante that the New St. Peter's might rise from their ashes. Boniface VIII. is there, the Grand Old Man of Anagni, whom the Colonna put through a mock crucifixion. The thirteenth century has left us no finer recumbent effigy than his. Close beside it is the ancient sarcophagus that received the bones of Nicholas Breakspear, the only English Pope; and the effigy is preserved, at the top of an inordinate inscription, of Paul II., the beautiful Venetian Pope, who wished to take the title of Formosus. He had a gigantic monument decorated with exquisite panels by Mino da Fiesole, and most of it is preserved, built into the walls of the Crypt. The sculpture by Matteo Pollaiuolo, depicting the martyrdom of St. Peter and St. Paul, which ran round the High Altar of Old St. Peter's, is here preserved entire; but everything pales in interest before the Tomb of St. Peter. Of the tomb itself you can see nothing. It lies hermetically sealed beneath an altar, approached by two not very ancient or impressive ante-chapels. But underneath the altar there still lies, heavily bricked up, the tomb of the Apostle, with the great gold cross, a hundred and fifty pounds in weight, deposited by the Empress Helena upon it. When they were laying the foundations of the present church, a hole knocked through the masonry revealed the tomb and the cross. The Pope, Clement VIII., was sent for hurriedly, and as there was a curse decreeing the instant death of anyone who disturbed the tomb, he decided that the best thing to do was to brick up the orifice, so that none of his subjects might tempt Providence.

Photo by permission of [*Douglas Sladen.*

THE GROTTE NUOVE, ST. PETER'S, ROME.

There are few places of greater interest than this crypt, for here are gathered together many valuable relics both of artistic value and historical significance. On the right is the confessio of Matteo Pollaiuolo, and the light shining from St. Peter's Tomb upon the sarcophagus of Junius Bassus.

Right opposite the door of St. Peter's tomb is the most exquisite Christian sarcophagus in Rome, the only ancient tomb in St. Peter's which still contains the bones laid to rest in it. It is the tomb of Junius Bassus, Prefect of Rome, who became a Christian in his year of office, a millennium and a half ago.

CHAPTER XXV

Mount Etna.—Etna, which the Sicilians always call Mongibello in ordinary conversation, is the principal volcano of Europe. It is ten thousand seven hundred and forty-two feet high and more than a hundred miles round. You can see it from the high ground above Palermo, on the other side of the island. It is a far more beautiful mountain than Vesuvius now, whether you look at the gradual slope on the Taormina side or the steep slope down to the sea from the Syracuse side, from which point it looks very like Fujiyama, the great volcano of Japan.

The most celebrated view of it is across the stage of the theatre of Taormina. The Sicilians do not regard it as an enemy, but as the mother of fertility, though it has on more than one occasion wiped out Catania. The first great eruption recorded was in B.C. 396, and the worst was in A.D. 1669, in which fifteen thousand inhabitants of Catania were killed.

The most characteristic features of Etna are the tremendous lava-streams crossed by the railway and the provincial road; an immense time elapses before anything will grow on these black sierras and abysses.

Photo supplied by] [*Underwood & Underwood.*

MOUNT ETNA.

"The Sicilians do not regard it as an enemy, but as the mother of fertility, although it has on more than one occasion wiped out Catania."

But when Ferdinand IV. wished to give Nelson an estate of exceptional richness, he gave him the Bronte estate on the flanks of Etna, the only place in Europe where there is a forest of orange-trees. Etna is extraordinarily rich in wild flowers, especially in irises of many colours.

The ascent of Mount Etna can be made at any time, but the snow makes it fatiguing in winter. The most popular time for ascending it is on moonlight nights in July. The ascent is made from Nicolosi or Randazzo. Nicolosi is the nearest, but Randazzo is a beautiful mediæval town. Etna has been in eruption quite recently, and in 1892 opened a new branch crater. The worst eruptions of Etna were those of B.C. 396, 126 and 122, and A.D. 1169, 1329, 1537 and 1669. In 1444 the cone fell into the crater. From 1603 to 1680 it was almost continually in eruption. In 1843 it almost overwhelmed the city of Bronte. But the greatest eruption of the nineteenth century was in 1852, though in 1865 the eruption lasted for more than six months. In two days the lava-stream, red-hot, ran fourteen kilomètres (about eight miles). There is an Observatory on Etna about nine thousand feet above the sea. The valleys on Etna are so deep that cities like Randazzo, quite

high up, are cut off from the danger area; the inhabitants can see the lava-stream running down the valley like a drain, in perfect security.

The old towns of Etna, Randazzo, Adernò, Paternò, and one or two others, are on the Circumætnæan Railway, which runs round the mountain from Catania to Giarre-Riposto. Etna has three zones —the cultivated, or *Piedimontana*, up to four thousand feet, one of the most fertile districts in the world, with a very even climate, which was the Campus Ætnæus of the ancients. The second, or *Boschiva*, is from four to six thousand feet—this is the forest district. The third, the *Deserta* or *Scoperta*, which in places has eternal snow, has hardly any animal life and very few plants except lichens and holy thorns.

The pictures show the Observatory, the mouth of the principal crater, and the celebrated Valle del Bove, which is one of the most unquiet parts of the mountain.

Virgil was evidently familiar with the phenomena of the eruptions of Etna to which he gives

Photo supplied by] [*Underwood & Underwood.*

MOUNT ETNA

Showing the great mouth of the principal crater.

prominence in the Æneid. Maniace, the castle of the Nelson family, is a long way from Bronte, which gives the Duchy its name. It stands near the spot where George Maniaces and Harald Hardrada won their famous victory over the Saracens. This part of Sicily is one of the worst for brigandage; the only unsafe district in the whole eastern part of the island.

Notre Dame de Paris.—The Cathedral of Notre Dame de Paris is the architectural *chef-d'œuvre* of the gay city. It is a magnificent example of early Gothic work. The Ile du Cité, on which it stands, is the oldest part of Paris, whose history began here in the days of Roman ascendancy.

Lutetia Parisiorum continued to flourish after the downfall of Rome and spread first to one bank and then to the other of the river. But since the swift current of the river that enclosed the Ile was the finest of defences during all the centuries that preceded the invention of gunpowder and modern weapons of war, the chief buildings of Paris, the Royal Palace, the Cathedral, and the Cloître de Notre Dame, or house of the Canons who dominated the university, were all situated within its narrow limits.

Photo by] [*Underwood & Underwood.*

MOUNT ETNA

A panoramic view of the volcano. In the centre of the picture can be seen the Observatory, and a good idea can be gained of the immense lava flows for which the mountain is famous

Photo by] [The Photochrom Co. Ltd.

NOTRE DAME DE PARIS.

This Cathedral is a magnificent example of Gothic architecture. It is situated on the Ile du Cite, which was the centre of ancient Paris.

The original church on this site dated from the fourth century; the foundation stone of the present Cathedral was laid in 1163, by Pope Alexander III., then a refugee in France. It consists of a nave with double aisles four hundred feet in length, and the aisles are continued round the choir, a very early example of this style of building, made so familiar in the Gothic churches of a later date.

The vault above the nave is one hundred and ten feet high, and the width of nave and aisles together is one hundred and fifty-six feet. A feature peculiar to Notre Dame de Paris is found in the rounded pillars supporting the roof of the nave.

The dignity and beauty of the effect made by the Cathedral as a whole has suffered the injury common to almost all the great churches around which a modern city has grown up. They were designed by the original builders to occupy an isolated position, to rise in massive dignity above surrounding meadows and gardens or to dominate in austere pride the low, small houses inhabited by man. But the increasing numbers and wealth of the citizens of Paris, as in the case of other cities, has resulted in crowding the Ile du Cité with tall houses and high buildings, from which the great towers and pinnacles of the Cathedral seem to strive in vain to extricate themselves. And to add to the slightly heavy effect of the whole, the high spires which were originally planned to rise from each of the towers have never been built.

The completion of the nave and the façade the finest portion of the Cathedral, was the work of the thirteenth century. This façade is the earliest example of this particular style of ornament and a number of later French churches are modelled upon it. Many of the figures with which it was adorned were destroyed during the Revolution; but some remain, and there is a wonderful piece

of thirteenth-century sculpture in the pediment; the angel holding the nails in this group fortunately escaped injury. The gargoyles on the roof and balustrade are remarkable pieces of work. The towers are fifty-two feet in height; in the south tower hangs one of the largest bells in existence, known as the Bourdon de Notre Dame. It weighs twelve and a half tons.

The exterior of the choir is made notable by its flying buttresses, which successfully achieve an effect of grace and lightness. They have been poetically likened to "kneeling angels with half-spread wings."

The Gothic fountain is modern work, designed of Vigoureux in 1845. Within the Cathedral, at the entrance to the choir, stands "Notre Dame de Paris," a mediæval figure of the Virgin, the work of the early fifteenth century, which has always been held in deep veneration by the devout.

Some famous relics are housed here; they include the Crown of Thorns, a nail from the Cross, and a fragment of the True Cross, which were brought from Palestine by St. Louis after the Crusades in 1239.

The Sainte Chapelle, now enclosed within the precincts of the Palais de Justice, was built for the reception of these holy relics.

On the choir screen are twenty-three scenes from the Life of Christ, reliefs in stone, which are the work of two men—uncle and nephew—between the years 1319–51. They are remarkable for beauty and dignity of treatment and are very fine examples of Gothic sculpture.

Mont Blanc.—Mont Blanc is the colossus among the mountains of Europe. The supremacy of its fifteen thousand seven hundred and eighty feet of granite over all rivals is unchallenged. And, unlike the giants of the Himalayas and the Andes, whose tracks are known to but a handful

Photo by] [*E. G. Wood.*

NOTRE DAME DE PARIS.

The Cathedral is as famous for its flying buttresses, standing round the lapse of the building, as for the gargoyles, which are formed of hideous and grotesque creatures.

of the intrepid, and to most of us are but names, the monster of the Swiss Alps is like a familiar friend. It is scarcely possible for us to realize, who have seen its white crest from so many points of view, who have trodden its rocky paths and stepped gingerly upon its glacier streams, even if we have not seriously attempted to scale its higher peaks, that it is not so many years ago that its ascent was as great an adventure as that of Mount Everest to-day. As far as its recorded history goes, the very first climber to reach its topmost peak was the guide, Jacques Balmat, in 1786. Later in the same year he piloted Dr. Paccard to the summit, and in the following year the mountain was scaled by de Saussure, the celebrated naturalist. The route taken by these and succeeding climbers for some years was not the same as that now followed almost daily all through the summer season. Besides the main peak, there are many lesser pinnacles still harder to climb, which have gradually yielded to assault as the years went on, and experienced climbers have attacked their frowning precipices. Such are the Aiguille Verte, du Dru and de Blaitière, the Aiguilles des

Photo by] [*J. W. McLellan.*

THE MER DE GLACE.

This glacier is amongst the best known of the Alps. It winds its way through the Pass of the Col du Geant, and its great ice-mass goes to form the source of the River Arve.

Charmoz and the Jardin. The Aiguilles Rouges are a wild rampart of pinnacles, buttresses, and peaks; many of the lower points are visited by crowds of tourists in summer. From the Col de Brévent, at the south-west end of the Aiguilles, an unsurpassed view of the peak of Mont Blanc is obtained, thrusting its proud head into the clouds, the black rock-splinters tearing jagged rents in the beautiful mantle of snow hung upon its shoulders. From the Flégère, a very fine view of the Mer de Glace is obtained, with the Aiguille Verte towering above. But the near pinnacles of the Aiguilles Rouges dwarf the summit of the greater peak of Mont Blanc as seen from this point.

The ice-streams that wend their slow and tortuous way down the deeply-scored sides of the mountain are peculiarly interesting. Of these, the Glacier des Bossons and the Glacier des Bois, better known as the Mer de Glace, are the largest and most accessible. The Col du Géant is a magnificent pass leading through the heart of this Mont Blanc chain and down this winds the great river of ice, its fissures glowing like sapphires, its polished crest shining like a silver shield in the sun. From beneath its ice-caverns the river Arve forces its way out and flows down the Vale of Chamonix. It is from this little town on the northern slope of the range that the ascent of the high

Photo by] [*H. N. King.*

MONT BLANC.

"Mont Blanc is the colossus among the mountains of Europe. The supremacy of its 15,780 feet of granite over all rivals is unchallenged."

peaks is accomplished. In this valley a Benedictine priory was established in the twelfth century, but it was little known until the eighteenth century, when the English travellers Windham and Pococke and the Swiss naturalist de Saussure discovered and advertised its natural beauties.

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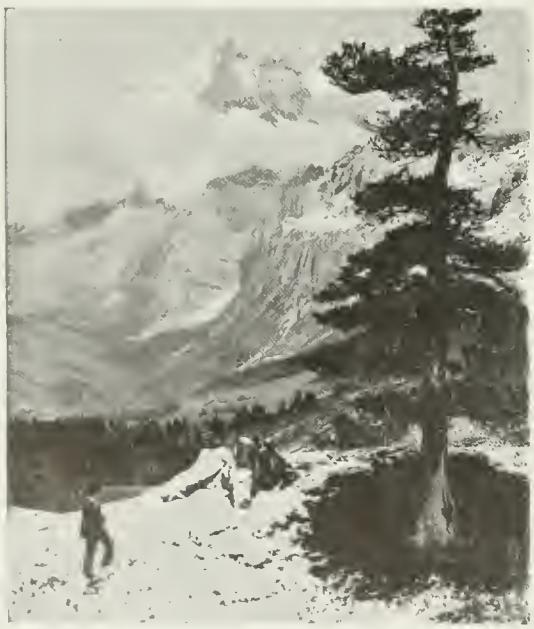
MONT BLANC.
A dangerous crevasse.

Mycenæ.—The ruins of Mycenæ, in Argolis, possess an unique interest for all who delight in the romantic stories of the past. Here we find evidences of a prehistoric civilization whose wealth, power and magnificence rivalled, and even exceeded, that of the great Eastern Dynasties. And the story of this wonderful world-power lay hidden and unsuspected under the dust of ages, or appeared but in scattered treasures discovered here and there, whose significance was not appreciated until the excavations of Professor Schliemann, from 1874-6, laid bare the secrets of the Mycenæan city. The story of his search for the city and burial-place of Agamemnon, and the marvellous discoveries that resulted from it, reads like a romance. The fact that Dr. Schliemann has revealed to us the actual civilization described in the stanzas of the Iliad, and enabled us to reconstruct in detail the daily life of the heroes, puts us deeply in his debt. To add to this, he has filled in for us a hitherto blank page in the history of mankind. The historian, Pausanias, was responsible for repeating the legend that the tomb of Agamemnon was to be found at Mycenæ, which was also the scene of his murder by the treacherous Clytemnestra and her lover Ægisthus. And whether or no Agamemnon was a living king or a hero of romance, whether or no the splendid tombs on the Acropolis at Mycenæ were built for the dynasty of the Atridæ or another, of which we know still less, their immense significance remains the same. An ancient civilization that reached a high state of perfection and artistic expression has been located, whose headquarters were at Mycenæ, in the Argolian plain, whose principal seaport was at Tiryns, nine miles distant, whose sister cities were at Hissarlik (the Troy of Dr. Schliemann), and at Knossus in Crete, and whose boundaries reached very much the same limits as those of the great Greek civilization which followed it. It is a notable fact that the neighbourhood of the Aegean, with its broken admixture of sea and land, should always have been the cradle of races very highly developed, with artistic perceptions above the average of their day.



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MONT BLANC.
The snow-capped pinnacles towering above the morning clouds

Mycenæ consisted of a walled citadel within a walled city. These walls are of Cyclopean

masonry, great hewn blocks, square, polygonal and triangular, perfectly fitted one into another to form a massive wall of defence varying from thirteen to thirty feet in height. But for a small postern, or sallyport, in the north wall, there is only one gateway in this impregnable wall, known as the Lion Gate. The triangular slab that crowns its immense lintel is sculptured with an heraldic device of two lionesses rampant, now headless, supporting a pillar or fire-altar. It was this design which first led investigators to connect the civilization of Mycenæ with the ancient Phrygian. This is one of the most widespread of Aryan designs; the tree, or pillar, between two beasts, or, in later days, two human figures, persists through all the ages, and is even found to this day in Oriental carpets and textiles, though its early meaning has been forgotten. Mycenæ gave up its secrets, like many another buried treasure-house, from out its tombs. Before Dr. Schliemann began his excavations, several beehive tombs had been unearthed in the lower city, showing the method of burial used there to have been distinctive and peculiar. But he searched upon the Acropolis itself for the graves of Agamemnon and his house. In 1876 he discovered tombs, five in number, to which a sixth was afterwards added, within the agora, or place of assembly where, according to Homer, the old men of the city were used to meet and sit upon a semicircle of polished stones. There at Mycenæ is the circle of stones, a double ring of upright slabs about eighty-five feet in diameter, on which other slabs were laid to form a seat. The tombs are hewn out of the rock, and within them both male and female skeletons were discovered. They were decked for burial with unequalled magnificence, and a profusion of golden jewellery. Gold face-masks, diadems and ornaments were found upon them, and even thin plates of gold were laid over the grave-clothes of the corpse: while gold and silver cups and vessels were provided for the use of the departed at his banquets in another world. These were the tombs of monarchs who ruled a people far advanced in the arts of civilization. The artists of Mycenæ had not only earthenware to paint upon, they carved and engraved ivory, bone, hard and soft stone, and wood; and they worked in metals, gold, silver, lead, copper and bronze. As in King Solomon's day, silver was far less used than gold. For their figurines bronze was the material usually employed: the two prevailing types are a female figure with a flounced and divided skirt and hair done in tails like the Assyrians: while the male figures

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THE LION GATE, MYCENÆ.

These noble lions, guarding the gate to the prehistoric Acropolis, form the most ancient piece of sculpture extant. The civilization which produced this noble work must have existed during the 17th and 16th centuries before Christ.

are nude except for a loin-cloth. The facial types shown in paintings and sculpture are distinctly non-Asiatic in type, and more resemble the modern Cretan hillmen or Albanians ; and the few skulls discovered agree with this.

The height of this great civilization is thought to have coincided with the eighteenth Pharaonic Dynasty in Egypt, which is usually set between the seventeenth and sixteenth centuries B.C. The great variety and changes discernible in the course of Mycenæan art show that it flourished for a considerable period of time, probably at least from the eighteenth to the fifth centuries B.C.

The marvellous preservation of these tombs and buildings, for the design of the palace and the living houses can be distinctly traced, is due to the sudden and complete abandonment of the city. The men of Argos, long the bitter rivals of the Mycenæans, attacked them in 487 B.C., and though the massive walls resisted all assaults, starvation compelled the defenders to capitulate. They dispersed to various states for refuge, and left their city to the kindly preserving of the dust and rubbish of the ages. To the fall of part of the citadel, which buried deep the kingly tombs now unearthed, is due their marvellous completeness of preservation. And no later peoples have ever taken possession of the ancient stronghold to rebuild it on their own plan.

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THE MEETING-PLACE OF THE ELDERS, MYCENAE.

This interesting construction in the citadel of Mycenae was discovered in 1876, during the excavations of Dr. Schliemann. It is the place of assembly where, according to Homer, the old men of the city used to meet and sit upon a semicircle of polished stones.

Beauvais Choir.—The Naveless Choir of Beauvais Cathedral has been described by an imaginative writer as "a melancholy fragment having no more than a head and arms flung out in despair, like an appeal for ever ignored by Heaven." The history of its building is a pointed illustration of the proverbial downfall of pride. Originally designed to be the great northern rival of St. Peter's at Rome, the builders of the Gothic Cathedral of St. Pierre de Beauvais aspired to outshine the great Basilica in beauty and to exceed it in size. Who knows how near their ambitious project might have approached its goal? Even now, although the choir and transepts alone were raised, and the choir fell in and the spire fell down, and the whole design had to be modified with every restoration and rebuilding, the general impressiveness of this great church is caused by its immensity, its loftiness, and its strange effect of soaring lightness. Whatever jarring impression its incompleteness may leave upon the mind, it takes away the breath of the least susceptible beholder.

From outside, the tall choir walls rise like high cliffs against which the flying buttresses leap up like the waves that lick the towering rocks. Their form and proportions are miracles of grace and lightness.

The great project was commenced with the building of the choir in 1225 A.D., but ambition overleaped knowledge, and the architect's pride was humbled when, in 1284, twelve years after its consecration, the roof and upper portion of the huge choir fell in. In its rebuilding much of its beauty had to be sacrificed to increase its stability. The three arches on either side of the choir

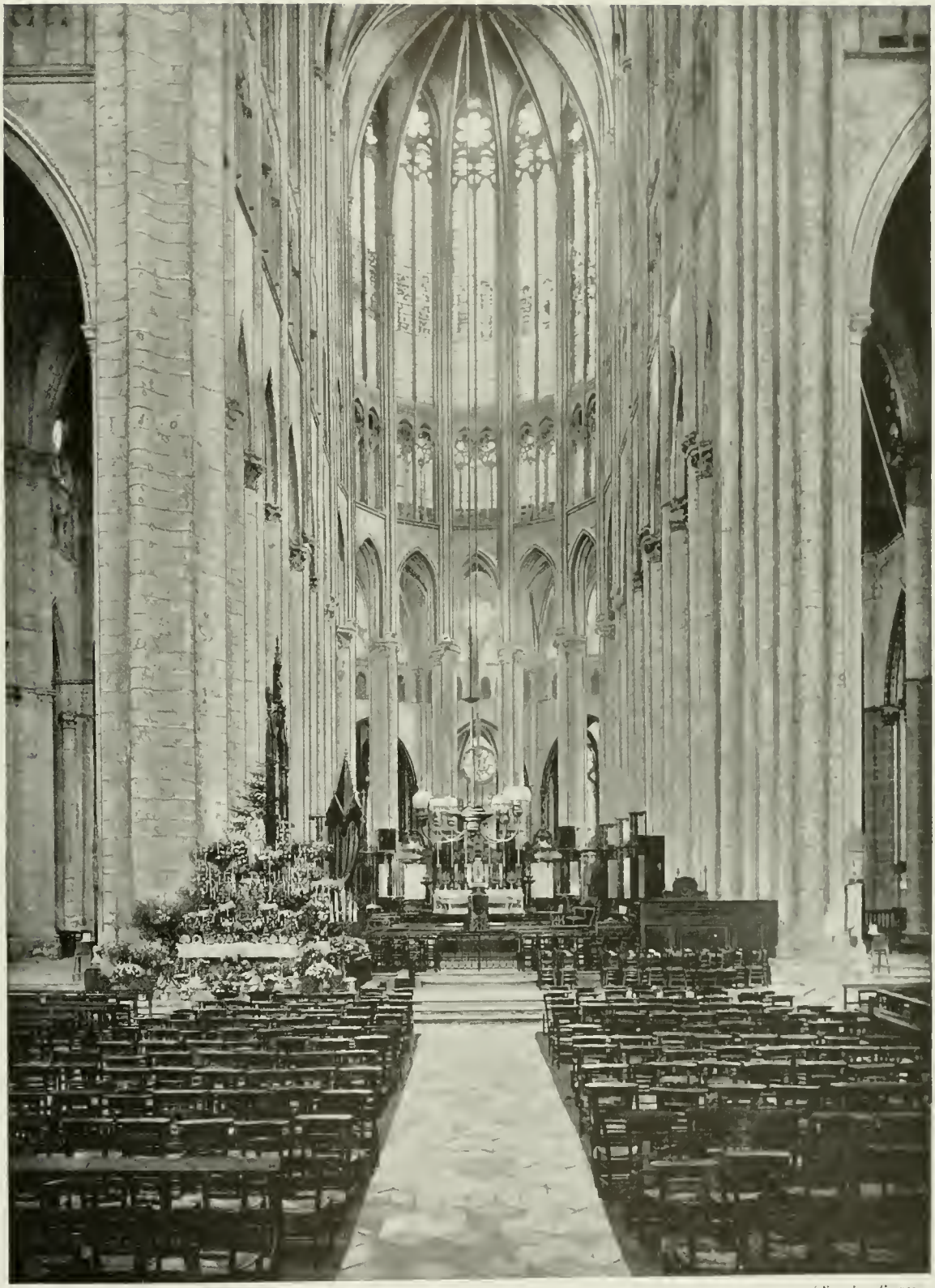

Photo by] [*Neurdein Frères.*

BEAUVAIS CHOIR.

Originally designed to be the great northern rival of St. Peter's at Rome, the beautiful Cathedral of Beauvais was almost ruined by the fall of the upper portion of the choir; the beautiful but restored remnant, however, testifies to the splendour of the incompleted design.

FLORENCE

A view of the notable city of Northern Italy, showing the Duomo, that splendid conception of Arnolfo di Cambio, who in 1296 was commissioned to build the loftiest, most sumptuous edifice that human invention could devise or human labour execute.

were sub-divided into six and slightly lowered. Therefore the best and most perfect work, being the first and original, is found in the transept aisles and the chapels of the apse. The choir has the apsidal end common in French cathedrals, which is so much more elegant in effect than the squared end more often found in the English. Stevenson wrote of the satisfaction with which he looked upon the east end of a French church, "flanging out as it often does in sweeping terraces and settling down broadly upon the earth as though it were meant to stay there."

The building of the transepts was continued after a lapse of years, in 1500, and dragged on for nearly half a century, when a spirit of haste came upon the builders, together with a sudden recrudescence of their ancient ambitions, and the continuation of the less interesting nave was abandoned for the erection of a spire which really should exceed in height the Dome of St. Peter's. This was finished in 1568, but in consequence, probably of the absence of nave, this great superstructure found insufficient support, and lasted but a few years. On Ascension Day, 1573, while the clergy and people were passing in procession through the streets of the town and the Cathedral was fortunately deserted, the spire fell with a lamentable confusion of destruction.

The spirit of the builders of Beauvais was now broken ; they ceased to aspire to eclipse the great Roman Basilica, and when the damage done had been repaired, contented themselves with crowning the choir with a modest spire of wood. And so this great choir stands to this day, a monument of what might have been had the Cathedral ever attained completion as originally planned. It is noteworthy that Europe's two most stupendous choirs, Beauvais and Cologne, were both finished almost simultaneously in 1322.

The stained glass of Beauvais is particularly fine and dates from the best period of the art.

" The space between its slender pillars is so entirely filled with glass that the whole range of windows only appears like a single zone of light."

Florence Cathedral.—" The beauty of the past in Florence is like the beauty of the great Duomo," says Ouida in " Pascarel." " About the Duomo there is stir and strife at all times; crowds come and go; men buy and sell . . . but there in the midst is the Duomo all unharmed and undegraded, a poem and a prayer in one, its marbles shining in the upper air, a thing so majestic in its strength and yet so human in its tenderness that nothing can assail and nothing equal it." Here is a beauty and a dignity that grows upon one; it cannot be truly appreciated until, like Ruskin, one has known and watched for many days " that bright, smooth, sunny surface of glowing jasper, those spiral shafts and fairy traceries, so white, so faint and crystalline, that their slight shapes are hardly traced in darkness on the pallor of the eastern sky, that serene height of mountain alabaster, coloured like a morning cloud and chased like a sea-shell."

The Duomo is dedicated to S. Maria del Fiore, in allusion to the lily in the city arms, it being traditionally supposed that Florence was founded in a field of flowers. In 1296 Arnolfo di Cambio was commissioned by the State to build upon the site of the Church of Santa Reparata, " the loftiest, most sumptuous edifice that human invention could devise or human labour execute." The magnificent designs of Arnolfo were not carried out in their entirety by later architects, but Giotto, who, in 1334, designed and worked upon the splendid tower that bears his name, and Francesco Talenti, who commenced work in 1350, and to whom we owe most of the cathedral we now know, were no unworthy successors of the ambitious Arnolfo. Many of the wonderful bas-reliefs round the lower story of the Campanile were the work of Giotto, others were done by Luca della Robbia in the fifteenth century. Ruskin has called these the " inlaid jewels of Giotto," and adds that " of representations of human art under heavenly guidance, the series of bas-reliefs which stud the base of this Tower of Giotto must be held certainly the chief in Europe." The beauty of this tower has inspired many a laudatory outburst in verse and prose.

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GIOTTO'S TOWER, FLORENCE.

This is really the Campanile, or Bell Tower, attached to the Cathedral. Upon it Giotto has lavished some of his finest work, so that it stands supreme amongst the beautiful buildings of the world.

Shortly after the death of Giotto a fine façade was added to the Cathedral which was the work of several

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THE JUNGFRAU.

Another of the notable peaks of the Alps. Often when the storm clouds envelope the mountain with their darkness, relieved by the snows of its summit, the scene is one of great grandeur.

of the first sculptors of the day; but it was destroyed in the sixteenth century. The present façade is modern. The many-coloured marbles which cover the building were gradually added during successive generations. And the Cathedral was not given its great dome until the fifteenth century. The splendid cupola rests upon a drum above the roof, and is the work of Brunelleschi. It is a double dome, the one being enclosed within the other; it is the earliest example of this design and ranks as the finest in Europe. The beautiful ribs are a feature of this dome and add much to its effect. A century later, when Michelangelo was commissioned to build the Basilica of St. Peter, to surpass the achievement of Brunelleschi was set before him as the object of his ambition, for until the completion of St. Peter's the Florentine cathedral was the largest church in Europe.

The interior of the Cathedral is vast, dim and bare. The exterior is so profusely decorated that in the entire absence of ornament in the interior we find a poignant contrast to the richness of its outer ornamentation. The reason of this is that the building was openly erected as a monument that should be worthy in size, dignity and beauty of the Florentine people and their greatness, not of the sacred use and worship that might have been expected to inspire it.

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THE JUNGFRAU.

It is from distances that the beauty of this mountain is most apparent, when its glaciers can be seen reaching down its wide flanks into the valleys far beneath

In the document which decreed its building this is expressly set forth. Other and older towns, especially Pisa and Siena, started cathedral building before Florence, and raised greater fanes than any she possessed, until by a sense of rivalry she was roused to give Arnolfo his commission in 1296. Every energy therefore was expended upon the exterior, that that might be made a thing of notable force and significance. The interior is vast and lifeless. The whole nave is only supported by four colossal arches, therefore there are no mysterious vistas, no clustering columns to lead the eye on and up, so that the immensity of the spaces is unrealized at a first entrance. And those pictures of St. Maria del Fiore that live in the memory are of the beautiful dignity of its brilliant outer shell, and the graces of its soaring Campanile that points with delicate, slender fingers to the deep and tender blue of the Italian sky.

The Jungfrau.—At an altitude of thirteen thousand six hundred and seventy feet above the sea level, and flanked by its scouts, the Peak of Silver and the Peak of Snow, the White Maiden, which in German is called the Jungfrau, pierces the bluest of ether, or, anxious to veil herself, throws a dense mantilla of vapoury clouds around her head. Not so tall as her immediate neighbour, the Finsteraarhorn, she is nevertheless far more celebrated—the symbol, as it were, of mountain-climbing, the banner of the Alps unfurled abroad in order to attract the tourist to green Alpine valleys, to the snows of glaciers, to the whipped foam of a waterfall. For the Swiss, moreover, the Jungfrau has a symbolic meaning. According to the tradition, three men took the Rütli Oath:

they are generally represented as standing in a mountain glen on the Lake of Lucerne beneath the starry sky, swearing death to the tyrant Austrian and freedom for their native land. Their left hands are clasped, their right arms raised with three fingers stretched out as the oath was taken. The Jungfrau, Mönch and Eiger, inseparable companions carved in rock and ice, are the symbol of those three raised fingers, of those three men who are supposed to have brought about the downfall of Gessler and the subsequent independence of the central cantons.

The ascent of the Jungfrau, though difficult and fatiguing, is not dangerous from the eastern side. The first ascent was made exactly one hundred years ago by two Swiss—guides they can hardly be called for in those days mountain-climbing tourists were as scarce as snow on the desert's face. Within the next forty years, that is, until 1851, only four further ascents were made, and it was only fourteen years later that two Englishmen, Sir George Young and Rev. H. B. George, succeeded in climbing the peak from the western, or Interlaken, side. To-day the ascents during the summer are frequent, but owing to the construction of the railway the boldest mountain climbers, annoyed

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STONEHENGE.

Stonehenge, or as it is in the Saxon, *Stanhengist*, signifying "the hanging stones," is noted for the mighty megalithic monuments which stand out boldly from the surrounding plain. The exact origin has never been conclusively determined.

at what they consider the desecration of their happy hunting-ground, have gone further afield in search of unsullied grandeur and mountain fastnesses undisturbed by the whistle of an engine. This engine, driven by electric power, and belonging to the rack-and-pinion system, curls with its train-load of travellers from the Kleiner Scheidegg around the Eiger, to the rear of the Mönch, emerging at a prodigious height on the western slope of the Jungfrau. It was begun in 1897, and opened as far as the Eismeer Station in 1905, but the originator of the idea, a financier in Zürich, did not live to see its completion. The Eismeer Station is at a distance of about four miles from the Kleiner Scheidegg, and three and a half miles from the proposed terminus, two hundred and forty feet from the summit of the mountain, which will eventually be reached by means of a lift. The utility of the whole scheme can be questioned, and the loud complaints of Nature lovers be justified, but the Jungfrau railway must nevertheless be regarded as one of the stupendous engineering feats of the age. Nor can it be said to have marred the beauty of the mountain in the eyes of those who have never seen its gigantic mass from a distance nearer than Interlaken, Wengernalp or the Kleiner Scheidegg. It is from such distances, moreover, that its beauty is most

apparent, because, having reached its sides, the mountaineer no longer admires its rocks and ice, but the view obtained over the surrounding country and over a sea of snow-capped peaks glistening in the sunshine.

Stonehenge.—Salisbury Plain, of military renown, can boast of the finest example of Celtic *cromlech* in existence, and though the majority of the menhirs which once constituted the enceinte have fallen, " the few hoary stones still extant are sufficiently imposing to excite the wonder of the passing traveller, and mysterious enough to puzzle the antiquary." Originally Stonehenge was a circular enclosure, three hundred feet in diameter, and approached from the north-east by an avenue, traces of which are still to be seen. It was formed of two concentric circles, eighty and one hundred feet in diameter respectively. The larger circle was composed of *trilithons*—that is, series of two menhirs surmounted by a capstone—and the smaller by " bluestone " menhirs. Of the trilithons, sixteen are standing out of thirty, and they vary in height from ten to thirty feet ; the " bluestones," originally forty in number, have dwindled to two or three, and are only four or five feet high. As seen by our illustration, these monolithic blocks were placed in a standing position. The two outer circles were followed by two horseshoe-shaped enclosures of trilithons, the open end facing the avenue. In the latter, and at a distance of about twenty yards from the described enceinte, stands to this day a huge menhir called " Friar's Heel," and where the outer circle crosses the avenue lies a recumbent stone, most likely used by the Celts for sacrificial purposes. Inside the smallest horseshoe enclosure, and in a line with " Friar's Heel " and the sacrifice stone, lies another recumbent menhir, fifteen feet long, called the altar. At the summer solstice, the sun, as viewed by a spectator at the altar, would rise immediately behind " Friar's Heel "—that is, it would have done so about three thousand six hundred years ago when the old Celtic Druids constructed their temple, though, owing to the lapse of centuries, there is a slight variation to-day. In other respects, too, Stonehenge has suffered changes, most of the trilithons having fallen, and many of the menhirs having been taken away in centuries past to be used in building. Nevertheless it remains one of the most mysterious and geometrically perfect specimens of Druid work.

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STONEHENGE.

The building of these circular enclosures by the Druids still remains a mystery. Those at Stonehenge are the most mysterious and geometrically perfect specimens of Druid work.

Chæronea.—Alone in its battered solitude, the Lion of Chæronea recalls to mind the last heroic attempt of the Greeks to save their country

from the encroaching power of Philip of Macedon. The Lion stands again to-day, as it did two thousand years ago, overlooking the battlefield of Chæronea, where, in 338 B.C., the Athenians, Thebans and Bœotians made their last stand and were routed. The Athenian dead were taken to their native city and buried to the stirring words of Demosthenes; the Thebans were, however, buried on the battlefield, and the Lion of Chæronea arose to mark their tomb. It was of blue-grey Bœotian marble, of huge dimensions, but by no means monolithic, having been carved in parts, which were united together with iron clamps. In the course of centuries it fell from its pedestal—according to one theory, having been blown up by treasure-seekers, but more probably because of the deteriorated state of its foundations. In 1905 a new pedestal was erected, and the Lion, after having been carefully mended and pieced together, as clearly seen in the accompanying photograph, was seated on its nineteenth-century throne, where it continues to hold watch over the pass leading from Phocis into Bœotia, not far distant from the Gulf of Corinth. A railway passes within a quarter of a mile of the spot, and a small village, Kapræna, nestles at the foot of the acropolis of Chæronea; but otherwise the Lion watches alone over the field of Philip's victory.

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THE LION OF CHÆRONEA.

This splendid Greek statue was dug up in 1880, together with the bones of 260 Greeks. It was erected by the Athenians to commemorate the heroic resistance of their countrymen in the Battle of Chæronea, B.C. 338.

Amiens.—Thirteenth-century Gothic has not left a nobler pile than the cathedral church at Amiens, generally recognized by art students to be one of the architectural gems of France. Our illustration shows the western façade, but the interior of the edifice is not less strikingly beautiful, and its one personal note, that by which it is remembered when details have been forgotten, is the central nave, one hundred and forty feet high—a height that is rendered more impressive by the low lateral aisles, the boldness of the columns and by the general sobriety of the Gothic architecture. The croisée, where transept and nave cross, is surmounted by a slender spire. The choir, of beautiful carved stalls and a screen of later date, being in the flamboyant style, has a deambulatory between it and the apse with its chapels. Lateral chapels terminate, moreover, the aisles running parallel to the transept. The total length of the church is four hundred and sixty-nine feet, and its width at the transept two hundred and sixteen feet. The western façade is a wealth of sculptural decoration in the Gothic style. The three portals are covered with statuary of saints, and that perfect precision and carefulness so dear to Ruskin are evident in the workmanship of each detail, whether ornamental or constructive. The central portal is surmounted by a fine thirteenth-century statue of the Saviour. The second and third bodies are formed of two running galleries, the inferior being composed of ogival-arched windows, and the superior of twenty-two niches containing statues of the Kings of Judea. The fourth body is remarkable for a handsome rose-window reminiscent rather of the Romanesque than of the Gothic style, owing, perhaps, to the square frame surrounding it. The two square-shaped spireless towers which terminate the façade are joined, in half their height, by a double gallery of delicate and fragile masonry of the best ogival workmanship.

Photo by] *[Neurdein Freres.*

THE CATHEDRAL OF AMIENS.

Ruskin, in his description of the Cathedral, has recalled the dictum of Viollet-le-Duc, who described the building as "The Parthenon of Gothic Architecture—pure, authoritative, unaccusable." The nave of the Cathedral is of unexampled loftiness.

Photo by] [*The Photochrom Co. Ltd.*

THE AMPHITHEATRE, NÎMES.

The exterior of this Amphitheatre is better preserved than any of those extant, even including the Colosseum at Rome. It is constructed of massive stone cubes, fitted together without mortar, and the whole arena was covered in Roman times with an awning.

Nîmes.—Situated in a central part of Nîmes, opposite the Lyceum, stands the city's greatest attraction, one of the most perfectly preserved Roman arenas in existence, dating from the latter part of the first century. The arena at Arles, likewise in the south of France, is larger, but its state of preservation cannot compare with that at Nîmes. The exterior wall of the elliptical building is four hundred and forty feet in its greatest length and three hundred and thirty-six feet in its greatest width. The arena, properly speaking, is only two hundred and twenty-seven feet by one hundred and twenty-six feet—large enough, however, for a man standing in it to appear insignificant as an ant to a spectator seated on the upper tier. As seen in the illustration, the arena is surrounded by a wooden wall or barricade. This is of modern construction, and serves, in a bull-fight (for the south of France is addicted to Spain's national sport, and this old Roman arena has seen the feats of some of the most famous *matadors*), as a rampart behind which the *toreros* can find refuge if charged too closely by the infuriated beast. The seats are divided into thirty-five rows of four tiers. According to Roman custom, the upper tier was reserved for persons of rank, the second for knights, the third for plebeians, and the fourth for slaves. The seating capacity is for twenty-four thousand spectators, who have access to, and egress from, the arena by means of one hundred and twenty-four vomitories. Four gateways, one at each axis of the ellipse, lead into the arena, the principal one being that on the north-west side, facing the Lycée.

Seen from the exterior, the building is composed of two stories, each of sixty arches or windows; the lower arches are flanked by square buttresses or pilasters, and the upper by Doric columns. An attic-like superstructure consists of a hundred and twenty projecting stones, or consoles, pierced with holes, to which was affixed the *velarium*, or awning covering the arena. As in the days of

the Romans sea-fights were among the tableaux represented, the rain-water was collected, by means of an ingenious sloping of the seats, in reservoirs, and was then used for flooding the arena. Noteworthy about the building is the thickness of the walls, the distance from the lowest tier of seats to the exterior of the building being one hundred and ten feet : the height, on the other hand, of the attic from the pavement is seventy feet.

Axenstrasse.—The romantic Lake of Lucerne, with its deep-green waters reflecting the heights of Rigi, Pilatus and the Uri Rothstock, cannot boast of a more picturesque corner than the southern extremity of the Urner See, along the eastern shore of which the Swiss Government built, in 1863, the far-famed Axenstrasse, leading from Brunnen to Flüelen, and serving not only as a tourist attraction, but as a strategical route commanding the approach from the south. This road has been hewn out of the rock, and forms a series of tunnels and galleries, now almost on a level with the lake, now hundreds of feet above it. Beside, below or above it, the St. Gothard line pursues the even tenor of its way, and it was primarily with a view to guard this artery of commerce between the north and the south that the Axenstrasse was built.

The Flüelen end of the road offers the wildest and most imposing scenery, commanded as it is by the Uri Rothstock and its glacier. Here also is the Axen, a grand mass of rock rising precipitously and to a height of over three thousand feet sheer out of the lake, and pierced by the longest tunnel on the route, at the corner of the Axenseck, just beyond Tellsplatte. This latter is a rock, surrounded by trees and projecting into the lake, popularly believed to indicate the spot where William Tell, the Swiss national hero, escaped from the boat in which he was being taken prisoner to Altdorf. A chapel, dating from the fourteenth century, crowns the spot to-day, and is the yearly

Photo by] [*The Photochrom Co, Ltd.*

THE AMPHITHEATRE, NÎMES.

Twenty-four thousand people could be accommodated on the surrounding benches, and 124 means of exit were provided for the audience. The thirty-five rows of seats were divided into four tiers, the first for important personages, the second for knights, the third for plebeians, and the fourth for slaves.

scene, on the Friday following Ascension Day, of a gala festival of Swiss peasants, who arrive in gaily decorated boats. Our photograph shows a picturesque sketch of the road to the south of Tellsplatte, looking towards Flüelen.

The Escurial.—The eighth wonder in the world, if we ask a Castilian, is the grim, lugubrious monastery and royal mausoleum of the Escurial, thirty miles to the north-west of Madrid and three thousand four hundred and thirty-two feet above the sea in the inhospitable mountains separating Old and New Castile. Rough and arid hilltops, scorched in summer by the sun and swept bare in winter by howling blizzards, surround the gigantic monastery on three sides, while on the fourth an open view is obtained to the south-east, in the direction of the immense rolling plains of Central Spain. Truly a fit setting for the pantheon of Spain's monarchs! Philip II., of Armada fame, chose the desolate site, for his Catholicism was morbid, and he gave the building, erected in his lifetime, into the keeping of the monks of St. Jerome, then among the most pious in Spain. He built his own tomb and watched the sculptor perfect his kneeling image. As soon as part of the edifice, but barely begun, was habitable, he moved into it, and, living in the severest austerity in a cell rather than a regal chamber, he died in his oratory to the right of the high altar. The latter part of his life was mainly preoccupied with the building of his *Real Monasterio de San Lorenzo del Escorial*, and, however much history blames him for his deeds, posterity must thank the combination of morbidness and true greatness of his character for having given to the world one of its most remarkable buildings, and to the Renaissance school of architecture its most perfect church.

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THE AXENSTRASSE.

This road, hewn out of the rock and forming a series of tunnels, was built by the Swiss Government in 1863. It leads from Brunnen to Flüelen, and is of considerable strategic importance, commanding, as it does, the approach from the south.

The Escurial, in the form of a parallelogram, seven hundred and forty-four feet by five hundred and eighty feet, covers an area of four hundred thousand square feet, surrounded by a wall of great height. St. Laurence is the saint to whose memory the monastery was dedicated in 1586, twenty-three years after the first stone had been laid; and the reason for this dedication is to be found in the battle of St. Quentin, when the king, who had been obliged to order the demolition of a convent erected to St. Laurence, vowed that if he was victorious he would build the saint the most marvellous monastery in the world. And he built it in the shape of a gridiron, in memory of the patron saint's martyrdom, and under the high altar of the church he placed a sumptuously-decorated octagonal crypt to serve as the mausoleum of kings and their mothers. The first to be placed therein was his father, the Emperor Charles V., and beside his tomb was left a vacant space with the following inscription in Spanish: "If any one of the descendants of Charles V. excels him in the prowess of his deeds, let him occupy this niche; all others are reverently to abstain from encroaching." The niche is still unoccupied.

By the Photochrom Co.

THE CHURCH OF THE RESURRECTION OF CHRIST.

This splendid modern church, which is built in the ancient Muscovite style, is erected over the spot where Alexander II. was assasinated. It took 24 years to build, and is a vast treasure-house of rare and precious mosaics.

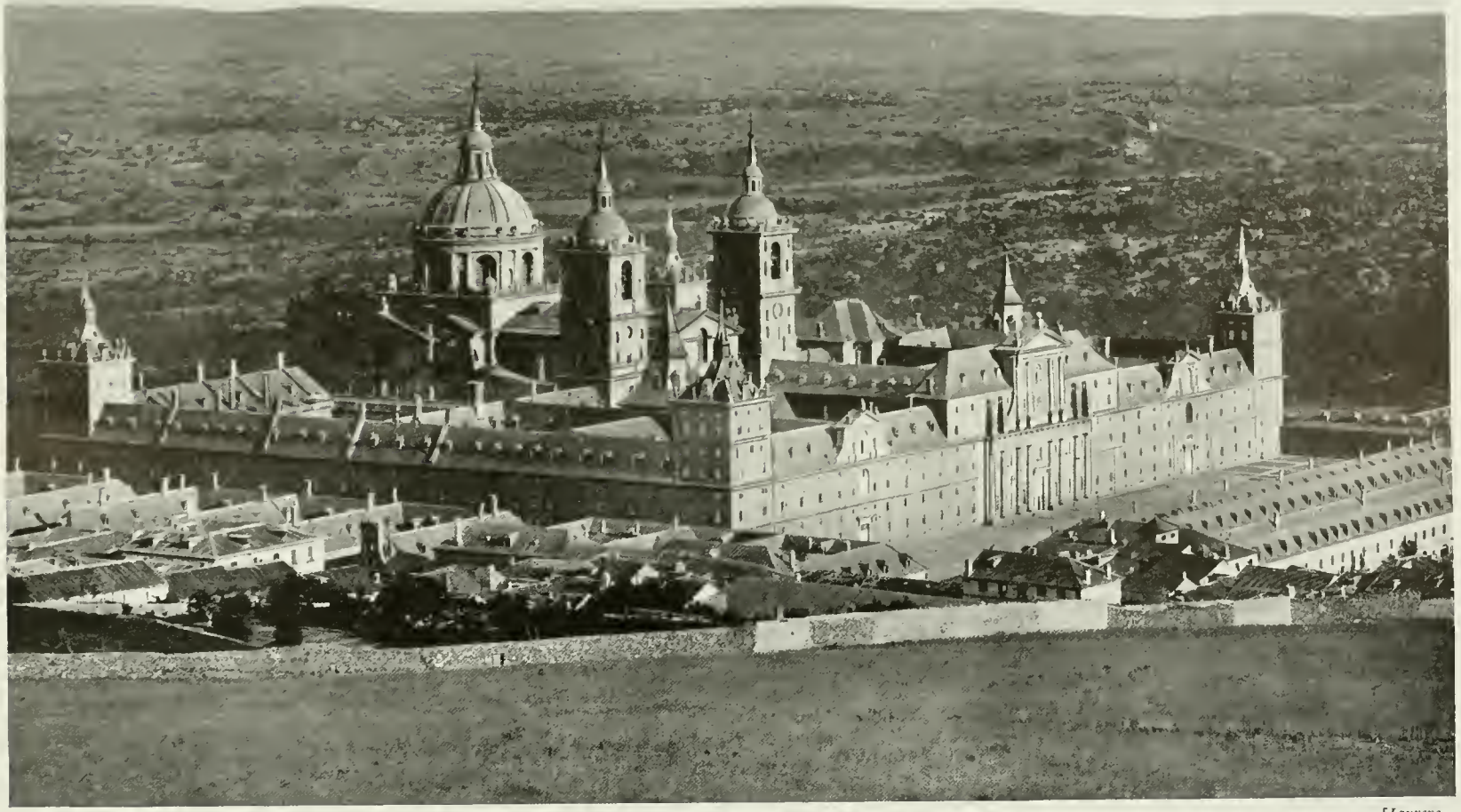

Photo by] [*Laurens.*

THE ESCURIAL IN 1581-84.

About thirty miles from Madrid Philip II. erected his splendid monastic palace, which contains the burial vault of the Kings of Spain. It is an enormous building, with, tradition tells, sixteen courts, forty altars, and one hundred miles of corridors. The view is taken from the hill where Philip used to watch the progress of the building.

Photo by] [The Photochrom Co. Ltd.

THE GLETSCHERGARTEN, LUCERNE.

Very imposing is the immense size of the Escurial, especially when seen, as in our photograph, from the *Silla de Don Felipe*, or Philip's Chair, a platform cut into the side of one of the overlooking hills, where the monarch was in the habit of reclining on a litter, watching the progress of his builders, consulting his artists, giving orders to his generals, and conferring with foreign ambassadors. The blue slate and leaden tiles of the roof glimmer for miles away; a perfect maze of windows dot the buildings surrounding the dome of the church —there are no fewer than twelve thousand windows and doors in the Escurial, ninety-five miles of corridors and over seven thousand saints' relics. Inside the monastery the architectural severity of the Doric order is without doubt unique in the world, and this severity is by no means lessened in the church, where fresco paintings and blood-red jasper decorations add splendour, but not triviality, to the whole.

Glacier Garden.—The action of glaciers on rock and stone is nowhere to be seen in a more picturesque form than in the Gletschergarten at Lucerne. These unique remains of a primitive glacier were discovered in 1872 in the vicinity of the famous Kursaal of the Swiss watering-place, and since then have formed one of the town's chief attractions. The gardens lie to the left of the Lion Monument, so eloquently apostrophized by Carlyle, and contain a series of thirty-two potholes, or miniature "giants' cauldrons," likewise called "glacier mills." In aspect they resemble granite cups of varying size and depth, the largest being twenty-eight feet in diameter, and the smallest five. In depth they show the same variation, the deepest mill attaining twenty-nine feet. Some of the potholes are in a perfect condition and can still boast of the cannonball-shaped granite sphere which, whirled around by swirling waters, ground the cup out of the living rock which was subsequently polished by the slow, grinding action of the ice.

Beside these glacier mills, the garden contains fossils of prehistoric date, and a large variety of Alpine flora—the whole in a setting of green trees, and a park-like enclosure containing chamois and deer. Remains of a lake-dwelling are also to be seen on the grounds, but these have been brought to the spot by the authorities from one of the Jurassic lakes in the west of Switzerland.

The Greek Theatre.—The Greek Theatre of Syracuse is one of the most perfect of the ancient world. It has not so many remains of its marble decorations as the Theatre of Dionysius at Athens; there are more extensive remains of the stage in other Sicilian theatres; but the whole magnificent sweep of the auditorium, carved out of the limestone rock, is perfect except for its marble veneer,

and its glorious views are enhanced by the fact that we can still enjoy their connection with history. Here several of Æschylus's tragedies were presented for the first time at the beginning of the fifth century before Christ, and here, towards its close, the women of Syracuse sat and shrieked and prayed while the supreme battle against the Athenians for the existence of the city was proceeding in the great harbour. Here, before the war began, its hero Hermocrates nerved the Syracusans to resist the omnipotence of Athens. Here Timoleon, the Genius of Liberty, was carried on a litter, in his blindness and old age, to be the oracle whenever the city was in straits. From its lofty sides you look across wide lemon groves over the waters of the great harbour and the marble harbour of Dionysius and the island citadel of Ortygia, all that survives except ruins of the London of the Greeks.

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THE GREEK THEATRE, SYRACUSE.

The whole of this vast auditorium is carved out of the limestone rock, and was once covered with marble.

The Street of Tombs.—At the back of the Greek Theatre is the Street of Tombs. More curious than beautiful, for it has none of the beautiful sculpture which made the tombs of the Ionian Greeks "the Bible of pathos." It winds up a hill with the ruts of chariots eaten deep into its rocky road; the Greek idea of a road was to scrape off the earth until you came to the rock, and level that roughly. On each side of the road low doorways admit you to square chambers cut in the rocky sides; both road and chambers are below the level of the surrounding land. In the chambers the most important personages enjoyed an arcosolia—lunettes four or five feet long, just wide enough to contain a hollow for the corpse, and cut in the shape of a coffin. People of less importance had coffin-shaped holes in the floor. In Sicily the ancients preferred to cut their tombs down instead of building them up. Tombs of a sort go all round the walls of the chamber. The most decorative tombs of Syracuse, like the Tomb of Archimedes, are not here; they are on the hill near the Latomia Santa Venere, and have porches, like temples.

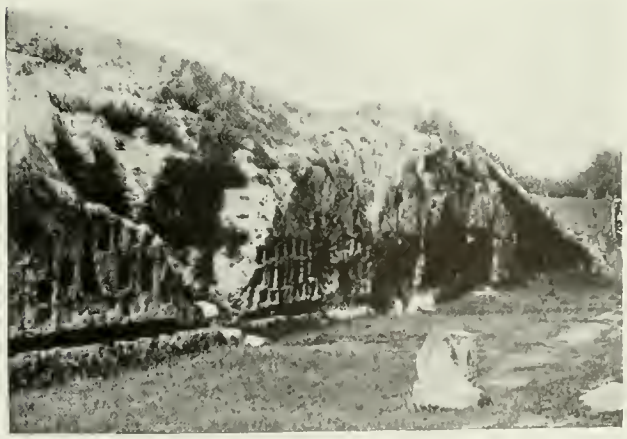

Photo by] *[E. G. Wood.*

THE STREET OF TOMBS, SYRACUSE.

People of rank were buried in the hollows cut in the wall; those of less importance in the floor.

Syracuse has the finest catacombs in the kingdom of Italy. There are catacombs no great distance from the Greek Theatre three miles in length and in parts very deep. They are neither cold nor damp, but wide, clean and airy. They are cut with great regularity and have numerous rond-points, or circuses, which may have been used for chapels. The catacombs of Rome are only superior to them in having paintings and inscriptions of which the Syracusan catacombs are almost destitute, though the catacombs of Palazzolo and the Val d'Ispica, forty miles north and west, are rich in architectural ornaments, like the tombs of the Etruscans at Cerveteri.

The Latomias, or Quarries, of Syracuse.—The chief point to remember about Sicily from the picturesque point of view is that, with certain settlements on the coast of Italy, it formed the greater part of Greece. The Greeks themselves spoke of Magna Græcia. In Greece proper the enterprisingness of Athens made the Ionian Greeks fill the greatest space in Greek history, which was also mostly written in the Ionian dialect. In Magna Græcia the Dorian race had its predominance owing to the enterprisingness of Syracuse. Syracuse was the largest and the richest of all Greek cities. It was the first European city to have a million inhabitants. The splendid buildings which filled the Temenos, or precincts of the Gods, between the five quarters of the city and its fortifications, of which a magnificent castle still exists, were built of stone excavated from the Latomias. Nearly the whole of Sicily is covered with a rocky floor, hollow underneath, which accounts for its marvellous catacombs and subterranean cities. Round Syracuse the floor is thin, and the quarrymen soon cut through it, laying open to the sky the vast caverns underneath, whose rocky sides gave an inexhaustible supply of magnificent building stone. Nowadays their bottoms are filled with a magnificent undergrowth, where they have not been laid out in orange groves and olive-gardens and almond-gardens, secure from the gales. Two of them are famous in history. The Latomia dei Cappuccini, which is by far the largest, was used as the prison of the two Athenian armies captured when the siege of Syracuse was raised. The Latomia del Paradiso, the next in size, contains the extraordinary cavern called the Ear of Dionysius. The bottom of this, according to tradition, was the prison in which the tyrant Dionysius kept his victims. At the top is a tiny gallery, accessible from the outside but invisible from within, in which the tyrant sat and listened to the conversations of his prisoners. While it was perfect he could almost hear a whisper; now a vocal acrobat makes echoes and organ noises for you to listen to which you could hear across the Thames.

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THE GREEK QUARRIES, SYRACUSE

From here was taken all the stone that went to build the ancient city of Syracuse—the first in Europe to have a million inhabitants.

The most beautiful of the quarries is the Latomia di Santa Venere (the Goddess of Love is mixed up with some obscure saint), and the dripping-well here is called the Bath of Venus. This quarry is the richest of all in tropical vegetation, and has its rocks honeycombed with niches which once contained the marble memorials of the Roman dead. The other two Latomias are unimportant, though the Latomia del Filosofo gets its name from having been the prison of a literary man who was so foolish as to laugh at the poetical attempts of his sovereign.

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THE GREEK QUARRIES, SYRACUSE.

A grotto in the Latomia del Paradiso. This quarry contains the cavern called the Ear of Dionysius, for the tyrant is supposed to have listened here to the whispered secrets of his prisoners, enclosed within the cave.

Photo by] *[The Photochrom Co. Ltd.*

THE CHURCH OF ST. BASIL, MOSCOW.

Built by order of the Terrible Czar, the Cathedral is said so to have delighted the monarch that he ordered the eyes of the architect to be put out, lest he should plan another.

The Cathedral of St. Basil the Blessed, Moscow.—This wonderful and ancient cathedral stands on the southern side of the famous Red Square (*Krasnaia Plostchad*), close to the walls of the Kremlin. It was built in the style of the old Muscovite Tsars in the years 1554–1557 by the orders of Ivan the Terrible, to commemorate the capture of Kazan. It is said that this monarch was so delighted with the cathedral when he saw it completed that he had the eyes of his architect put out, so as to prevent the unfortunate man from planning another one like it.

The cathedral is composed of eleven chapels superimposed in two rows, forming a most curious whole, which is crowned by twelve domes of the most variegated forms and colours. Each chapel has its separate cupola, iconastase and altar, adorned with many pictures of saints. The body of St. Basil is buried in one of these chapels.

The design and colouring of the domes of Russian churches in general appear extraordinary and almost barbaric to the observer at the first glance, especially when this peculiar style of architecture is developed to the extravagant degree which is illustrated in the Cathedral of St. Basil the Blessed. A closer study, however, reveals the beauty and originality of this particular style.

In 1812 Napoleon I. ordered General Lariboisière to blow up the cathedral, which he profanely styled a "mosque." Fortunately circumstances prevented the destruction of one of the most interesting monuments in Russia.

The Cathedral of St. Basil, erected to commemorate the capture of Kazan achieved by Ivan the Terrible under circumstances of inconceivable horror, is to-day the object of the peculiar veneration of the Orthodox.

Ivan the Terrible, the monster who slew his son with his own hand, who roamed the dungeons of his prisons seeking to invent new tortures for his unhappy victims, the man who turned naked women and girls into the forests in order that he and his courtiers might hunt them down with bows and arrows, has left this beautiful and wonderful building to revive the memories of his reign. This singular monarch was, nevertheless, the first to introduce the printing press into Russia. His

warriors were the first to commence the conquest of the vast and fertile regions of Siberia. But perhaps the most extraordinary of all his efforts was the sending of a mission to England to demand the hand of Queen Elizabeth in marriage. Such was Ivan the Terrible, to whom we owe the Cathedral of St. Basil the Blessed.

The King of Bells.—One of the most famous of the larger bells in existence is the "Czar of Bells," on its pedestal at the foot of the Ivan-Véliky tower in the Kremlin at Moscow. Our illustration gives a good idea of its size; its height, from the lower rim to the base of the sphere, is sixteen feet, and its greatest circumference fifty-eight feet, so that twenty men could easily stand side by side on the pedestal in the interior. The total weight is two hundred tons, that of the broken bit alone being ten tons!

The King of Bells was never used. It was commissioned in 1735, and two years later, when still in the mould, a fire destroyed the workshops of the contractor, with the result that the bell was broken. It was consequently left in the earth, another and smaller one being made, and taking its intended place in the Ivan-Véliky tower. A hundred years later the original bell was dug up and placed on a pedestal of solid masonry, and surmounted by a globe and cross as seen in the illustration. The artistic merit of its decorations warranted the change in its fortunes, for the outer surface is covered with allegorical bas-reliefs showing Czar Ivan and Czarina Anna Ivanovna surrounded by cherubs, as well as by figures representing the Saviour and Saints Peter, Paul and John. A medallion inscription surmounted by the Russian eagle covers the broken side, and thus, though the bell was mute-born, and has never chimed from the height of the neighbouring Ivan-Véliky campanile when a new czar came to the throne of all the Russias, it nevertheless

THE GREAT BELL, MOSCOW

This bell, although the largest in the world, has never been hung, for it was cracked in the foundry, and now forms a chapel. It is nineteen feet high, sixty feet round the rim, and weighs 198 tons.

has a story to tell, and impresses the spectator more, perhaps, than if it had been hoisted to its exalted place between heaven and earth.

The Kremlin.—"Above Moscow, the Kremlin; above the Kremlin, Heaven," runs a Russian proverb, and no further words are necessary to describe the importance of this citadel in the heart of Moscow, on an extensive hill to the north of the river Moskwa. It is the emblem of the spiritual and temporal power of the Czars—an agglomeration of monasteries and palaces (the former among the wealthiest in the world), of churches and cathedrals, of towers and spires, the whole surrounded by a sixty-feet-high wall. The bells of the Ivan-Véliky campanile in the Kremlin are the first to ring out the news that a czar has ascended to the throne of his fathers; in the convents and monasteries are secluded the princes and princesses of the royal family, and here also lie the mortal remains of the present ruler's forbears. As for the view from the summit of the Ivan-Véliky tower, it is an oriental dream of extraordinary magnificence.

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THE REDEEMER GATE, KREMLIN.

This gate was built in 1491, in the reign of Ivan the Great, by Pietro Solari, of Milan. It is an object of peculiar veneration to the Russian people on account of the famous eikon framed in gold over the entrance.

Our illustration shows the exterior view of the Spaskiia tower crowning the principal entrance into the Kremlin from Krasnaia Square. This one-hundred-and-eighty-feet-high structure, called, "of the Saviour," is the most famous tower in Moscow, the lower part having been built in 1491 by the Milanese architect P. Antonio. One hundred and thirty years later the English architect Holloway was commissioned to erect the upper portion of the tower, which he did in the Gothic style. The clock itself dates from the eighteenth century, and is of Russian workmanship. On each side of the entrance is a small chapel, resembling a sentinel-box rather than a religious place of worship, and above the entrance a figure of the Saviour, "the palladium of the Kremlin," gives its name to the tower. It was brought to Moscow from Smolensk in 1685, and a lamp was suspended by the Czar Alexis on a chain from its pedestal. The order was, moreover, given that all who passed under the lamp should reverently raise their hats—an order that was obeyed, under penalty of death, and has now become a custom observed by all patriotic Russians.

The Crater Lakes of North Germany.—Although we know that in the elementary stages of the world's history, Northern Europe had her share of active volcanoes whose outbursts were every whit as terrible as those of more Southern climes, it is difficult to realize this to-day. For they have slumbered so long, and Time and Nature have so robbed these volcanic mountains of their terrors, rounding the lava crags and covering them with verdure, filling the craters with earth or water, that little remains to connect them now with their violent early outbreaks. And yet, in travelling about those countries where evidences of former volcanic evidences abound, one cannot

Photo by] [*E. G. Wood.*

THE KREMLIN, MOSCOW.

This is the great fortress-sanctuary of Russia. Many cathedrals, monasteries and palaces, the great bell and the Ivan-Veliky Tower are situated within the Kremlin walls, which are crowned with eighteen towers and pierced by five gates.

help wondering if it be altogether impossible that some day these chimneys by which the interior heat of the world was relieved may not be called upon again to do their work.

This idea is strongly roused in North Germany, where many extinct volcanoes have yet retained their threatening characteristics. Several are unusually striking and all are extremely interesting.

The special German volcanoes of the Eifel district, which are the subject of this article, have the same peculiarity as those extinct volcanoes of Auvergne and North Italy—viz., that of having filled their crater rings with pools of water, forming those beautiful tarns known as crater lakes. These are rendered peculiarly attractive from their setting amid masses of bare and craggy lava, and the silence and solitude of their surroundings.

Those interested in volcanoes, scientifically or otherwise, should not overlook the Vorder Eifel district, which, roughly speaking, lies between Coblentz and Andernach on the Rhine. The scenery can scarcely be surpassed for sylvan beauty, while evidences of former volcanic outbursts meet the eye everywhere, making a sharp contrast, which is unexpected in Northern climes. Lava is piled in masses, or spread in streams that may be followed for miles on every side. Houses and roads are made of it, and it is evident that when the greatest convulsions of Nature took place the Eifel district was a warm corner.

The volcanoes whose crater rings are now filled with lakes are nine in number. The largest is Pulvermaar, near the village of Gillenfeld, and not far from the Moselle. Its unexpected appearance in the midst of a desolate level (for the sides of the volcano have crumbled away), makes a great impression. Bordered with pine-trees, reflecting their sombreness in the motionless water, they shut it in a charmed circle. It covers ninety acres in extent, is three hundred feet deep, with a circumference of two and a half miles. Circular in shape, it lies one thousand three hundred and

Photo by] [*Mrs. J. E. Whitby, the author of the accompanying article.*

THE EXTINCT CRATERS OF GERMANY.

The Lake of Pulvermaar.

Photo by] [*Mrs. J. E. Whitby, the author of the accompanying article.*

THE EXTINCT CRATERS OF GERMANY.

The Weinfeldermaar. The village and castle lie under the lake, only the church remains standing on the further side.

fifty feet above sea-level. It takes its name, Powder Lake, from the black volcanic dust of its sloping sides. There is something so incongruous about the pall-like silence that hangs round the scene now, and its desolation and the recollection of the violent forces that hollowed out the bed of the lake, that one gazes fascinated and yet repelled.

Two small pools near by fill craters which once formed part of the same burning mountain.

The most weird of all the Eifel crater lakes lies near Mauderscheid, one of the beauty spots of the district. Lack of space forbids a detailed account of the natural loveliness, but the village clings to the edge of a steep cliff overhanging a beautiful circular and wooded valley, where a silver stream meanders around and between two rocky eminences crowned with rival medieval castles, making a scene not easily forgotten. On one side the country stretches into open landscape, where stands the volcanic hill, the Mosenberg.

It is one thousand seven hundred and fifty feet high, is a mass of basalt, springs abruptly from the plain, and not even Nature's untiring hand has succeeded in clothing its barren sides with a blade of vegetation, though it has been extinct an unknown length of time. In its fiery youthful days it had four craters, and the lava crags are fifty feet high. The crater lake lies in one of its pointless cones, which, rising bare and solitary, is perhaps the most convincing volcano of the Eifel. Its horrible bareness, the awful stillness of the black water, the tortured-looking lava crags, seem to cut the place from all that is sweet and bright in life. It has a terrifying, haunting aspect, and seems to breathe despair. One turns away with a shudder, to draw a breath of relief at the sight of red-roofed, simple village homes in the distance.

An immense lava stream flowed for nearly a mile from the south crater of the Mosenberg. It filled a valley, where in its turn the waters of the Kleine Kyll have quietly worn themselves a lava bed. At Horngraben the lava piled itself into perpendicular cliffs two hundred feet high, resembling those of the Giant's Causeway, Ireland.

Another large crater lake near is the Meerfeldmaar, but Time has levelled its slopes and it resembles an ordinary but beautiful loch that reflects the charms of the surrounding country. Two smaller pools furnish peat.

Near Daun three more of these remarkable crater lakes are to be seen. They lie close together and, indeed, fill three craters of one enormous volcano. They are specially curious, inasmuch as though close neighbours, they are on different levels. The smallest, called Gemundenemaar, which is one thousand three hundred and sixty feet above sea-level, may be considered the beauty of these lakes. It lies in a wooded basin once the crater, with a fine lofty background. It covers eighteen acres, and is two hundred feet deep. Here are no visible lava crags; all is hidden by luxuriant vegetation thriving in volcanic soil.

On the steepest side of the old volcano lies the Weinfeldermaar, which covers forty acres and is three hundred and thirty feet deep. If the lake at Mauderscheid inspires horror, this induces

Photo by] [*Mrs. J. E. Whitby, the author of the accompanying article.*

THE EXTINCT CRATERS OF GERMANY.

The evidences of laval flow at Horngraben.

sadness. Still, silent, without even a bird's voice to break the spell, without a bush or tree to speak of life, it yawns alone on the hill-top, the very type of a living death.

Only a tiny church stands on its bank. There is not a house in sight to promise worshippers, nor a ruin to tell of the past history of the little village which once, it is said, clustered round the now lonely house of God. A local legend explains the appearance of the lake in a romantic way: A thriving community, it is asserted, once lived in the volcano crater, much as the populous villages cluster round the slopes of Vesuvius. It appears to have been more than usually wicked, and, according to the story, was threatened with Divine punishment. The castle lord, riding out one day with a henchman, turned to take another proud look on lands and home, but saw to his amazement that only a stretch of water lay before him. Turning back, they found that only the church and a babe in its cradle found washed up to the church door had been spared.

This lake lies separated from its sister Schalkenmeerenmaar by a mere dyke the width of a road, and it is curious to learn that the inhabitants from the village with the same long name as the lake, bring their dead to the solitary church on Weinfeldermaar for the funeral service. Up the steep slope and across the narrow dyke the coffin must be carried, no matter the weather.

Schalkenmeerenmaar, the largest of the three Daun lakes, lies in the oldest of the Eifel craters,

Photo by] [*Mrs. J. E. Whitby, the author of the accompanying article.*

THE EXTINCT CRATERS OF GERMANY.

Schalkenmeerenmaar—the only volcanic lake in the Eifel with a natural outlet.

Photo by] [*Mrs. J. E. Whitby, the author of the accompanying article.*

THE EXTINCT CRATERS OF GERMANY.

The Mosenberg Volcano, near Mauderscheid, Eifel district.

and is the only lake whose waters show any sign of a natural outlet. From it flows the little river Alf that falls into the Moselle at Bullay. Being cultivated on all sides, it has a less forlorn look than its neighbour. Towards the east the lake appears to be drying.

The black volcanic sand of the surrounding hills furnishes material for the manufacture of roof tiles.

To the north of the little town of Daun, which is surrounded by streams of lava, slag, and other volcanic débris, lies the small crater lake of Ulfenemaar, which, covering thirteen acres, is surmounted by a ruined castle.

The Laacher See, which is the largest of these remarkable lakes, is perhaps not quite strictly a crater lake, for while in the other cases the part of the cone remained to hold the water as in a cup, in this the whole mountain disappeared, a small sea taking its place. This lies surrounded by woods, is five miles in circumference, a mile and a half in diameter, and is said to be bottomless. Here was evidently the central point of volcanic activity in the Vorder Eifel. The mountain had five craters, and no less than forty lava streams can be counted close by. The picturesqueness of the Laacher See is now greatly enhanced by the beautiful Benedictine abbey that stands on its bank.

In considering the illustrations it must be remembered they were necessarily taken from a height, which greatly dwarfs the apparent height of the crater slopes.

Forth Bridge.—The railway bridge on the line going north from Edinburgh to Aberdeen, and crossing the Frith of Forth from Linlithgowshire to the County of Fife, is certainly one of the most famous engineering feats of the nineteenth century, and was proclaimed by M. Eiffel, the originator of the tower which bears his name, to be "the greatest construction in the world." It took seven years to build (1883–90), at a cost of three million pounds sterling, the engineers being Sir John Fowler and Sir Benjamin Baker. This "Giant Bridge," two thousand seven hundred and fifty-six

yards long, is of a cantilever and central girder system: "the principle of which is that of stable equilibrium, its own weight helping to maintain it more firmly in position." The cantilevers, of which there are three, repose on gigantic caissons sunk in the Forth, and weigh, when full of concrete, fifteen thousand tons. The greatest depth at which these caissons were sunk was ninety feet below high-water. The height of each cantilever is three hundred and seventy-five feet—in other words, as high as some of the most famous church towers on the Continent. The spot chosen for the construction of the bridge is opposite Inch Garvie, an island in the Forth, separated from each bank by a channel two hundred and forty feet deep. The problem was to span these channels at a height that would not interfere with navigation. One of the cantilevers being erected on the island, it remained to erect two more as close to the shores of the Forth as possible. The result was that from the central cantilever two immense spans had to be constructed, one to the north and the second to the south, in order to join the three cantilevers. The stupendous length of these main spans is no less than seventeen hundred feet, constituting a record in bridges of this type. Apart from the boldness of the design and its execution, the Forth Bridge stands unique as regards the method employed for the sinking of the caissons, this work alone having brought scientists and engineers from Europe and America who were keen on studying the pneumatic process employed. In the construction of the cantilevers and spans no fewer than forty miles of tubing were employed, and the total weight of the metal used is approximately fifty thousand tons. The rails run at a height of one hundred and fifty-four feet above high-water—in other words, at a height equal to that of the Albert Hall in London.

Carnac.—Brittany, the home of the Celts in France, is more favoured by Druid remains than any country in the world. Of the sixteen hundred menhirs still extant in France, over eight hundred

THE FORTH BRIDGE, SCOTLAND.

This bridge, crossing the Firth of Forth and so joining Linlithgowshire with the county of Fife, was proclaimed to be "the greatest construction in the world." It took seven years to build and cost £3,000,000 sterling.

are to be found in Brittany, and the greater part of these in the alignments around the small village of Carnac, nine miles to the south of Auray, which is on the line from Quimper to Nantes. It is computed that the number of menhirs originally standing in this district must have been fifteen thousand, though to-day less than six hundred are left, either standing or recumbent. The area comprises the five alignments of Ménec, Kermario, Kerlescant, Erdeven and Ste. Barbe, and extends to Locmariaquer on the Morbihan, where lies the largest known menhir, sixty-seven feet long; within recent years it has unfortunately been broken.

The nature of these alignments, though thoroughly studied by Mr. Miln, an Englishman, are still the object of discussion. The menhirs were used for sepulchral purposes, but also, it is believed, as defensive works. The whole district around Carnac must have been inhabited by a Celtic tribe, and in Bessenno, half a mile to the north-east, the Romans built a fortified camp. Some of the menhirs were erected after the Roman occupation. Among the alignments have been found many dolmens, which differ from trilithons as at Stonehenge in that they are composed of groups

Photo by] [*Paul Gentaur.*

CARNAC.

These "*alignements*" form the most extensive Druidical remains in the world. It is computed that there must have originally been 15,000 menhirs or Druidical monoliths erected.

of menhirs surmounted by one or more capstones. These dolmens generally crown a cairn (or carn, whence Carnac) or tumulus containing a burial chamber. The most noted of these is Mont St. Michel, the only hill in the neighbourhood, and now crowned by a chapel from whence a magnificent view is obtained over the low-lying, flat and mysterious district. The three alignments of Ménec (place of stones), Kermario (place of the dead) and Kerlescant (place of burning) can easily be followed from the summit of this forty-foot-high hill, the upper portion of which was constructed by the Druids in order to contain a hidden chamber.

St. Petersburg.—The capital of all the Russias is the youngest European capital, having been founded by Peter the Great towards the end of the seventeenth century. It is as young as Moscow is old, and in many respects the white city on the Neva there where it joins the Gulf of Finland, is the most majestic and royal city in the world. Essentially a residence for officialdom, society and pleasure, its broad avenues are gay with lights and merriment, and palaces line the boulevards and the Neva, the latter frozen during five months of the year.

The most gorgeous of these palaces is that of the Czar commonly known as the Winter Palace, and situate on the river at its widest part. The elegant Palace Square precedes it on the land side,

Photo by] [*Paul Géniaux.*

CARNAC.

The exact use of these "menhirs" is still a debatable subject, but it is believed that they were erected by the Celtic tribes for the double purpose of marking the burial place of a chief and of affording defensive works. Some of these menhirs were erected after the Roman occupation.

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THE WINTER PALACE, ST. PETERSBURG.

The Palace is notable chiefly for its vastness, with a facade of 455 feet facing the enormous square in which 20,000 troops can manœuvre with ease. In the centre is the rose granite column erected to Alexander I., the largest monolith in existence.

and in its centre stands the monument erected in honour of Alexander I., the most noteworthy feature of which is the rose granite column—the largest monolith in existence to-day—forty-seven feet in height. The building itself is rectangular in shape, four hundred and fifty-five feet long by three hundred and eighty feet wide and one hundred and twenty feet high, and is of a ruddy-brown appearance, topped by an iron roof of a reddish colour. It was begun by the Czarina Anna Joannowna in 1731; but was practically destroyed a hundred years later, and had to be rebuilt at a cost of twenty-five million roubles. Refined elegance is the keynote of the Winter Palace, from the grand Ambassador's Staircase, to the Nicholas Hall or ball-room with its sixteen huge windows looking out on the Neva; from the red-velvet Throne Room with its silver decorations, to the Romanov Gallery with its portraits and martial pictures. In the Treasury are preserved the Czar's regalia, foremost among the jewels being the Orlov diamond in the imperial sceptre, supposed to have been the companion stone of the Koh-i-noor. Both diamonds, so runs the legend, formed the eyes of a lion at Delhi, and one of them, the Orlov, was stolen by a Sepoy and sold to a captain for two thousand guineas. By the time it reached St. Petersburg, not only was its price fabulous, but it had incidentally cost the reigning Czar a peerage.

Peterhof.—If the Winter Palace is the official residence of the Czar, and consequently open during the height of the St. Petersburg season, Peterhof is essentially a summer palace in extensive grounds and beautifully laid-out gardens on the southern shore of the Gulf of Finland. The original plan was to create a second Versailles—a three-story building joined to annexes by means of galleries. Gilded cupolas in Russian style were, however, added, with the result that the French prototype has been completely masked or disguised. The view from the terrace of the palace towards the Gulf of Finland is one of the most enchanting garden landscapes in the world. At the foot of the paved, broad walk is the Samson Fountain depicting the biblical lion scene, spouts of water eighty feet high spurting out of the lion's mouth. The basin is surrounded by forty-five gilt statues, and encircled by six broad steps of coloured marble in the form of an amphitheatre, down which the water rushes in glistening cascades. The interior of the palace contains a succession of rooms elaborately decorated and hung with pictures—mostly by Russian masters—and tapestries, foremost among which is the Gobelin in Peter the Great's Hall. There are three dependencies in the grounds: the Eremitage, famous for its collection of Dutch painters; Monplaisir, a Dutch villa picturesquely situated near the seashore; and Marley, a two-story house where Peter the Great used to live, and where are kept many historical relics of the most remarkable genius ever produced by Russia.

The Church of the Resurrection of Christ, St. Petersburg. In Memoriam Alexander II. This superb pile is erected over the spot on which the "Tsar Liberator" fell mortally wounded by a band of assassins. The church was commenced in 1883, under the reign of Alexander III., and consecrated in 1907, in the thirteenth year of the reign of Nicolas II.

It is built in the ancient Muscovite style of the Cathedral of St. Basil the Blessed, but on infinitely grander and more beautiful lines, and at a cost of several millions of roubles. There is probably nothing like it in the world.

Externally the church is an imposing mass of granite and coloured brick, surmounted by huge gilded and enamelled domes.

Internally it is a vast treasure house and a tremendous work of art.

In no building in the world has any attempt been made to cover such large surfaces with mosaics, with which the whole interior has been treated from the plinths of green marble to a height of one hundred and forty-seven feet under the principal cupola. Italy and Greece have been ransacked for rare and lovely marbles in different colours; the quarries of the Ourals have supplied jasper, orletz, lapis lazuli in vast quantities. The doors of the iconastase are of solid silver. The *ikons* are draped in beautiful pearls and studded with costly gems.

Amidst all these splendours there lies under a splendid baldachino, or canopy, of polished jasper, superbly worked, a little strip of the common cobble-stones and a short strip of ordinary iron railings. Some of the stones are chipped by the force of the bomb explosion which killed Alexander II., who fell mortally wounded on this very spot. This rough bit of a common street left intact amidst such glowing splendours appeals strongly to the imagination. The first bomb thrown at the imperial carriage missed its mark, but mortally wounded a Cossack of the escort. The Emperor had but to drive on to reach his palace in safety; but in spite of all entreaties he insisted on leaving his carriage to attend to his faithful Cossack, when the second bomb exploded with deadly effect. Thus unselfishly perished the Emperor who abolished serfdom, who freed the Balkans from the cruel yoke of the Turks, and who was about to grant a constitution to his people when he was murdered by anarchists.

It may be truly said that the memorial to the Emperor Alexander II. is worthy of a great and humane monarch.

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THE AVENUE OF FOUNTAINS, PETERHOF.

The view is taken from the bridge spanning the centre of the waterway, and leads the eye to the famous Samson fountain, whose jet of water rises to a height of eighty feet.

The Church of the Resurrection is lavishly lit by electricity after dark, and the spectacle afforded at an evening service, when the priests in their golden vestments officiate to the music of a highly-trained choir of beautiful voices, is one of the greatest interest.

Westminster Abbey.—London possesses the two most famous churches in England—the one dedicated to St. Peter, the other to St. Paul. The name of the latter saint is familiarly associated with the great cathedral that rises from the summit of the hill overlooking the whole of the metropolis; but the dedication of the Abbey Church to the honour of St. Peter is not so generally known. The great Westminster Abbey stands by the river side in the low-lying land which was once known as Thorney Isle—the Terrible Isle—a waste of marsh and thicket, and shunned by all save the wild animals who were regardless of its lonely terrors. Tradition alone supplies the earliest records of the Abbey Church, and ascribes its foundation to King Lucius (A.D. 178), who here built a Christian fane on the site of a temple dedicated to Apollo; but a later tale gives the credit of the first church to King Sebert of the East Saxons, who was converted by St. Augustine about the year A.D. 604. A tomb supposed to be his is still to be seen just outside the ambulatory. Tradition has added to the story of the consecration a legend that is particularly beautiful. One stormy Sunday night Edric, a fisherman, was casting his nets into the Thames when he was asked by a stranger to ferry him across the river. He complied, and after landing his passenger, he watched him make his way to the new church. Then the whole air was filled with light, and to the fisherman's astonished gaze there appeared a ladder of glory whereon walked angels with lighted tapers. When the stranger returned, he told him that he was Peter, the keeper of the keys of Heaven, who had himself consecrated the church erected to his glory.

Photo by] [*The Photochrom Co. Ltd.*

WESTMINSTER ABBEY, LONDON.

Perhaps this is the most sacred spot in England, for the splendid fane is intimately connected with her life-story, and many of her most famous sovereigns and most honoured sons are buried here. Furthermore, the Abbey is a splendid specimen of Early English architecture.

But it was Edward the Confessor who first set about erecting a church which was not to have its equal throughout the whole realm of England. He expended much money upon the fabric, and directed the work of building the Abbey with great zeal; but when he died, early in A.D. 1066, only the choir and the transepts of the new church had been consecrated. The work then languished, and it was not until the reign of Henry III. that building was renewed. "Renewed," however, is scarcely the correct term, for Henry destroyed the previous building and re-erected a church more in accord with the taste of his time. Henry's aim was certainly to vie with, or even excel, the work of the great French cathedrals, such as Beauvais or Chartres; but national and insular characteristics had to be reckoned with, and the ultimate style of the architecture was Early English. This is a

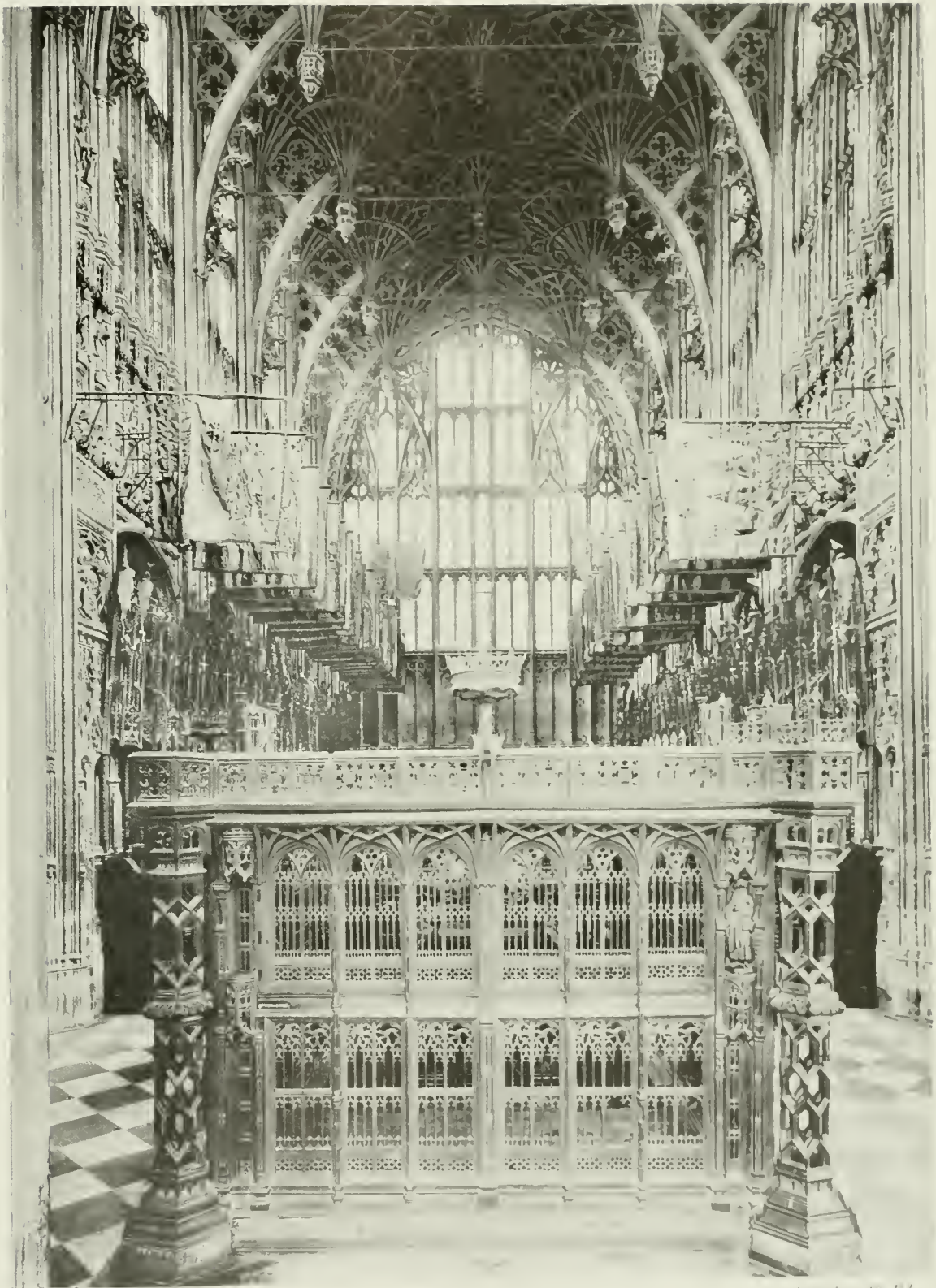


Photo supplied by] [*The Photochrom Co., Ltd.*

HENRY VII.'S CHAPEL, WESTMINSTER ABBEY.

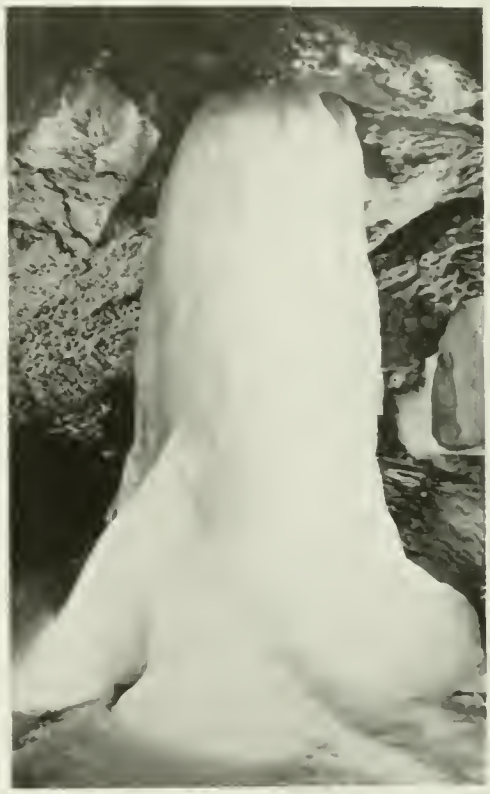
From of old this chapel has been surnamed "The Wonder of the World." Built by Henry VII. to propitiate his subjects, it became the resting-place of himself and succeeding sovereigns. It is the chapel of the Knights of the Bath, and is particularly noted for its ceiling of "fan-tracery."

Photo by] [*H. L. Eisenmann.*

THE ICE CAVERNS, DOBSINA.

Dobsina is a small town in the Hungarian Erzgebirge, remarkable only for its wonderful ice caverns, which are the largest in Europe, and cover an area of about 10,000 square yards.

branch of perpendicular Gothic, and very lovely it is. Ornament takes only a second part in the plan of the building, where everything is subservient to the beauty of line and impressive loftiness. But a long time was to elapse before the building was completed: the greater part of the nave was built in the reign of Henry V., and only towards the latter part of the reign of Henry VII. did the Abbey, such as we know it, approach completion. To this King belongs the glory of the beautiful foundation that bears his name. He intended the chapel of Henry VII. to be worthy of the royal dust it was to enclose. Very worthy indeed it is. Built on the site of Henry III.'s Lady Chapel, which was pulled down in order to be supplanted by this architectural jewel it obtained on account of its beauty and the cunning works it was adorned with in bronze and marble and carved wood, the well-merited title of "The Wonder of the World." The delicate fan tracery of the roof is of unparalleled beauty and splendour, and the great bronze entrance-gates can scarcely be surpassed for skill of design and workmanship. Very brief mention can only be made here of the nave of Westminster Abbey with its triforium gallery, which is one of the most beautiful features of this most beautiful church; of the sacrarium, with its wonderful mosaic pavement; the St. Edward's Chapel, known also as the Chapel of the Kings; the ambulatory; the cloisters—indeed, nothing here should pass unnoticed, for all are worthy of this most glorious building of which they form the parts. Westminster Abbey bears witness to the love and zeal of many generations of Englishmen. Above and beyond all, its fabric bears the impress of careful planning and attention to detail, of veneration for past tradition and pride in present greatness—in a word, of that thoroughness and unity which are the acknowledged attributes of Englishmen.



AN ICE STALACTITE IN THE CAVERNS OF DOBSINA.

Dobsina.—Dobsina, an insignificant mining town in the Hungarian Erzgebirge, one hundred and fifty miles to the north of Buda-Pest, sprang into celebrity one day in the seventies of last century when a mining engineer discovered in the adjacent valley of Stracennae the largest ice-cavern in Europe, containing a storage of ice calculated at more than six million cubic feet. That was forty years ago; to-day the village is large on the map, and in the vicinity of the cavern a health and pleasure resort with first-class hotels has sprang up, and tourists leave Dobschau (or Dobsina) with its iron, cobalt and nickel mines, and rush northwards through the wild and romantic Straczine valley to the cavern, the portal of which is reached along a road among pine-trees at an altitude of over two thousand feet. During the summer months the cavern is lighted by electricity, and the effect of the artificial light shimmering among resplendent stalactites or illuminating ice-walls of crystalline purity is dreamlike in its weird beauty. The total area of the cavern is ten thousand square yards, of which eight thousand square yards are covered with ice formations of varied shape.

On entering the Eishöhle the visitor gains the first hall, called the Eissalon, eleven yards high by one hundred and twenty long and thirty-five to sixty wide. The average temperature is $-3°$ C., though in summer, when the outside temperature rises to twenty-two degrees Celsius, the thermometer in the interior climbs to above freezing-point. In winter, on the other hand, when the outside temperature has been known to descend to $-25°$ C., the thermometer in the interior

Photo by] [*Neurdein Frères.*

THE RAMPARTS OF CARCASSONNE.

registered on the same day only −8° C. During the hottest months of the year the surface of the ice in the cavern melts slightly, and the floor is apt to be covered with water, which freezes, however, in the following winter. Owing to this circumstance, the ice stalactites and columns which reach from the ceiling, partly covered with ice and partly bare, to the floor, are in a state of continual change, but their beauty is by no means impaired thereby. From the upper hall, the area of which is roughly five thousand square yards, one hundred and forty-five ice-hewn steps lead through an ice-corridor to the lower hall, two hundred yards long, at the further end of which rises a wall of transparent ice twenty-five yards high. The view of this immense frozen salon is broken by three gigantic columns, each with a diameter varying from two to four yards. Organ formations of solid ice are to be found in both halls, those on the upper story being the most remarkable for their size. Hills and mounds of crystalline ice, stalactites flashing with a thousand gems, walls of a blue transparency, and snow-white archways of frozen drops, are among the phenomena in this wonderful cave in the Hungarian mountains.

Carcassonne.—The history of this ancient town goes back to a very early date. There was a town of some importance here at the time of Cæsar's invasion of Gaul. Situated in the extreme south, it occupies a commanding position on either bank of the river Aude. The old town is built on a hill, and is surrounded by a double line of ramparts, with towers, dating from the thirteenth century, which gives it still the aspect of a mediæval fortress. Its castle dates from the eleventh and twelfth

Photo by] [*Neurdein Frères.*

ANOTHER VIEW OF THE RAMPARTS OF CARCASSONNE.

centuries. The so-called "new town" dates from the thirteenth century. In 1262 the city rose up in rebellion against the royal authority, an act of independence which Philip Augustus put down with a strong hand. On the fall of the city the principal inhabitants were expelled, but were afterwards given permission to remain in the district, and they founded a settlement on the other (the left) bank of the river. This part of the town was fortified in the fourteenth century; the earthworks can still be traced. Carcassonne has a sensational history. It was a stronghold of the Visigoths, and was held by them in face of repeated attacks from the Franks. But in A.D. 724 the Saracens succeeded in expelling them and took possession of the town. They in turn were defeated and driven out by Charles Martel. From the ninth century the Counts of Carcassonne were independent princes; but in the thirteenth century the adherence of the reigning Count, Raymond Roger, to the cause of the Albigenses brought about the downfall of his house. Simon de Montfort brought his Crusaders to the gates of Carcassonne in 1209, and Count Raymond was compelled to yield. He died in captivity.

The Cathedral of St. Nazaire in the old town is principally of eleventh century workmanship. The churches of Provence are noted for the pointed-barrel vaulting of their naves, but the finest of all is that at Carcassonne, dating from A.D. 1090.

There are also some magnificent stained glass windows.

Photo by] [*Neurdein Frères.*

CARCASSONNE.

The Cite, or old town, is the most perfect example in existence of a mediæval fortress town. It has a double line of fortifications with fifty round towers and is dominated by a citadel. The outer belt of ramparts extends for over 1,600 yards.

Pisa.—Pisa is one of the most notable cities in Italy, and, indeed, in the whole of Europe. Not only does she to-day boast a group of architectural monuments that are unique for magnificence and for the more technical qualities of style; but she has a history of which she may be justly proud.

The name of Pisa is writ large on the scroll of fame as a small but proud Republic, strong in the valour and hardihood and fearlessness of her citizens, daring to declare her independence when most of the Christian world was cringing at the foot of either Pope or Emperor, and yet in those troublous times increasing in commercial prosperity and wealth till she became a fair and noble city spread out upon the banks of the Arno amongst the Tuscan hills, a city which kings delighted to honour, with a cathedral that was found worthy to witness the coronation of a Pope. It was Pisa who checked the advance of the Saracens when they threatened to overrun Europe, and it was Pisa who furnished the Emperors with galleys and mariners to transport the Crusaders to the Holy Land. Not alone could she convey to the East the great hosts who sought to deliver Jerusalem from the Infidels; but her name ranks with Venice and Genoa in the great enterprise, while one of her bishops, Daimbert, became Patriarch of Jerusalem. Such stirring times cannot be passed without leaving their mark on the towns which witnessed them, and when we of to-day are considering the monuments which still remain, we must needs be mindful of that glorious past, for it is that past which has raised the marble columns and carved white stone and has consecrated the glorious fabric just as the Italian sun has penetrated into the substance of the marble, so that it is no longer white and dead, but glowing and creamy gold. The Cathedral of Pisa, of which the Campanile forms a part, is so situated that its whole beauty is revealed to the onlooker in the first glance. The streets of the old town are quiet and grey and narrow, with great shadows falling across the road and high houses on either side, and the Via Solferino is by no means a wide street, so that only as one

Photo by] [*Newton & Co.*

THE BAPTISTERY AND THE CATHEDRAL, WITH THE LEANING TOWER, PISA.

All these buildings are of the purest Carrara marble, which shows off the beauty of the Lombard Gothic architecture to perfection.

approaches its termination can any vista of the great Piazza be obtained. But pass quickly to the end of the street and the first impression will not easily be forgotten. The sunlight floods over the great Piazza in dazzling contrast to the shadows of the roadways. Thick green grass covers the whole extent of the vast square (a rare sight in Italy, where most of the cathedrals and beautiful churches are hidden away in the dingiest parts of the mouldering cities and towns), and there are the four great buildings of Pisa, the Duomo or Cathedral, the Campanile or Leaning Tower, the Campo Santo and the Baptistery, all built of the marble taken from the quarries not far distant, which is world-famous for its whiteness. But these buildings are old and the more beautiful for the years that are gone, and have become so much a part of the surroundings that they appear to be built of pure sunlight.

The Duomo is of immense proportions and, externally at least, of very beautiful design. It is built in the shape of a Latin cross; the nave is three hundred and twelve feet long and at the east end terminates in an apsidal choir; the transepts are of great length (three hundred and twenty-seven feet), and so great is their size that they have aisles. At the juncture of the four arms of the cross is an elliptical dome ornamented with a ring of delicate marble arches. But the chief feature of the building is the exterior ornamentation. This is effected by means of colonnades of arches surrounding the whole of the building. For some distance from the ground these arches are of considerable size and far apart; but on the next storey they diminish in size, a factor that materially adds to the delicacy of their design. The Leaning Tower is treated in the same way, but here the arcaded galleries stand out farther from the main structure, and are therefore more apparent. In the Cathedral these arcades are most effective on the west front and round the apse. On the former façade are fifty-eight pillars, which rise tier upon tier to the roof. Their beauty is further thrown

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THE DUOMO, PISA.

This most beautiful building is built of the white marble brought from the quarries not far distant. It is in the Tuscan-Romanesque style, and the view here given shows the beautiful façade with its fifty-eight colonnettes. The great bronze west doors were cast by Giovanni da Bologna.

into relief by the great bronze doors, which, although unable to vie with the celebrated bronze-work at Florence, are themselves of great beauty. They replace some of much older date which were destroyed in the fire of 1596, and are the work of Giovanni da Bologna; for, advanced as were the Pisans in the art of stone sculpture, they were unequal to the rival artists of the great Italian centres of culture in painting and metal-work. In sculpture two names stand out pre-eminent—Nicolo Pisano and Giovanni Pisano, his son. To the greatness of the father the hexagonal pulpit stands as a splendid memorial, while Giovanni is remembered by the pulpit in the Cathedral. Both are masterpieces and are built up on the same designs, but they differ considerably in style and manner of execution, the work of Nicolo showing a severity and dignity which in the work of his son gives place to a tenderness and a suavity of line and marks out the different temperaments of the two

Photo by] [*Anderson.*

THE CATACOMBS OF THE CAPPUCCINI, PALERMO.

The custom of this burial was instituted to allow the bodies of the wealthy to be laid in the sacred earth brought from Palestine When the bodies were cured they were taken out to make room for others and stored away as in the illustration.

men, who were each of them influenced by the ideas of the different ages in which they lived. Perhaps the greater refinement of Giovanni's work is due to the influence of Giotto, the follower of St. Francis of Assisi, and so indirectly to his teaching.

But little mention has been made of the Baptistery, which is extremely beautiful and is circular in shape, roofed by a curious and somewhat eastern cupola, which meets the upstanding walls on a series of Gothic arches. Sculpture and rare marbles cleverly mingled add to the wealth of decoration. Inside is a circle of marble columns which enclose the sanctuary and support a second circle of pilasters, which in their turn support the roof. Each of these capitals is ornamented. There is besides a magnificent octagonal font raised on a platform above the pavement. It is beautiful with delicate mosaic, and was sculptured by Guido Bigarelli da Como in 1246.

The Tower of Pisa is too well known to need much description. Its propensity to lean is (as Dickens writes in his "Travels in Italy") "as much as the most sanguine tourist could desire." The exact cause of this slant has for centuries been a matter of conjecture, but authorities are now

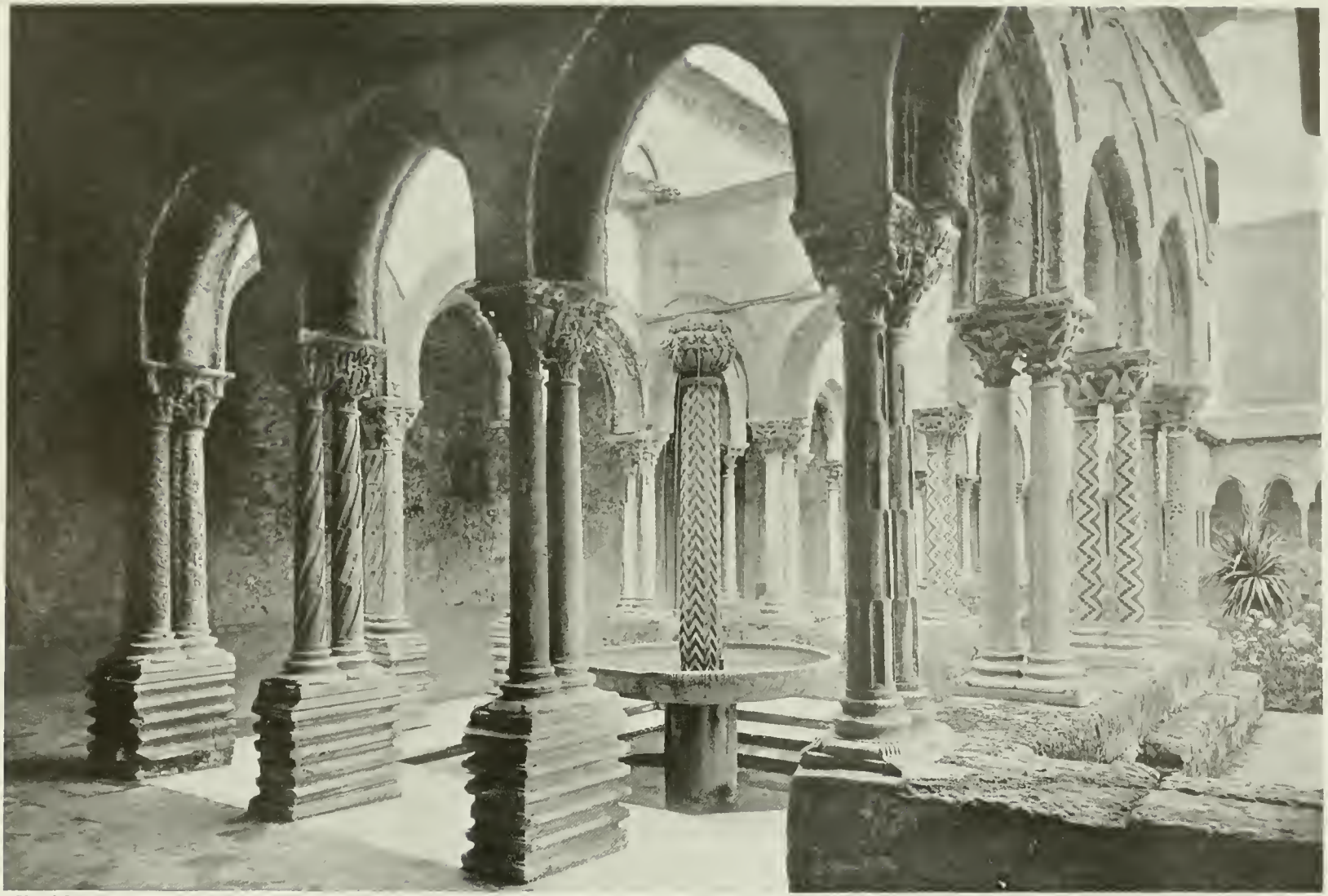

Photo by] *[Anderson.*

THE CLOISTERS, MONREALE.

These Arabo-Norman cloisters are the largest in Italy, and are foremost among the finest specimens of Christian architecture. There are 200 pairs of columns, of a great variety of design, and enriched with beautiful sculpture or rich inlay work.

agreed that it is due to the unstable foundation on which the Tower was erected. For this cause the builders were obliged to rectify the instability of the soil, but were unable to restore the building to the perpendicular. One great advantage was in later years to be derived from this misadventure. The great Galileo, who for some time lived in Pisa, was by means of the Leaning Tower enabled to work out his experiments in gravitation.

The Catacombs of the Cappuccini at Palermo.—This is one of the most surprising sights in Sicily, infinitely better than the catacomb of the Cappuccini in Rome, because in these clean, airy, un-smelling vaults you see the meaning of the Cappuccini mummies. Here in Palermo the Admiral of Aragon brought a shipload of earth from Palestine for the Cappuccini monks. The corpses of the rich were buried in the sacred earth until they were cured, and were then taken out to make room for others. They were dressed in the robes of state which they had worn in their lives; their hands and feet were bound together tightly with cords, partly as an attitude of humility, but also, doubtless, to keep the bodies stiff and in position; and, as they were erected on the sides of the vault a century or two ago, so you may see them, very well preserved. Some—perhaps those who did not pay so much—were put in chests covered with crimson velvet instead of being hung on the walls, and some effected a compromise by having the top of the chest transparent. This method of interment is not permitted any more in Palermo, but these cardinals and princes and duchesses make a brave spectacle for a tourist's holiday.

Photo by permission of [*Miss Lorrimer, author of "By the Waters of Sicily."*

THE CAPPELLA PALATINA.

"The Jewel of Sicily." Perhaps the most perfect casket of mosaic work in the world. The walls are inlaid with rarest marbles and the arches are supported on most beautiful columns of cipollino and porphyry.

The Cloister of Monreale.—The Arabo-Norman Cloister of Monreale rivals the temples of Girgenti and Segesta and the theatre of Taormina for the crown of beauty in Sicily. It is the largest cloister in Italy, surrounded by two hundred pairs of slender columns, many of them with capitals sculptured with legends incomparably carved. In one corner is a Moorish fountain whose beauty baffles description. The cloister is filled with a deep sward, starred with orchids and anemones. The Cathedral behind it contains seventy thousand square feet of twelfth-century mosaics, among the finest in the world, and the view from its back over the orange groves of the Concha d'Oro is the richest in Sicily.

Messina, the Earthquake City.—Messina is a city that never had its due from the tourist and

Photo by] [*Wm. Cutlack*

MESSINA

A view of "The Earthquake City" after the disaster

now never can have. It was the fashion to say that if a visitor to Sicily saw Taormina, Palermo, Syracuse and Girgenti he saw all that he need see unless he threw in the Temple of Segesta. Catania and Messina were negligible quantities, though Catania, if he had known it, was the best city in Sicily for buying curios, and Messina as an artist's city had hardly a superior in the island. Messina before the earthquake consisted of about four long streets running round the circumference of its hills, with very steep streets, frankly called the Torrent of S. Francesco and so on, running down from the hill-tops to the sea. The bottom of the long streets constituted the quay of the sickle-shaped harbour, and from it rose the celebrated Palazzata, or crescent of palaces, three stories high, adorned with columns like a classical temple—the most beautiful street in the world seen from the harbour.

Above this were the two chief modern streets which embodied some of the best old churches—the glorious Cathedral, the Greek church, the little Byzantine church which encrusted the Temple of Neptune, the ruinous Sicilian-Gothic church of the Teutonic knights. Above them was the Street of the Monasteries, beloved by every artist, for it was full of fifteenth-century doorways which had belonged to these monasteries, and full of gardens. And above it, outside the museum, stood the Gothic monastery of S. Gregorio, cleft from base to summit by two previous earthquakes sent to give warning of the wrath to come. From the terrace of S. Gregorio, or the gigantic ramparts of King Roger's Castle, there were views of unparalleled beauty over castle-crowned mountains, and the blue strait with its sword-fish harpooners, and the rough mountains of Calabria beyond.

The earthquake smote Messina till the very outlines of the streets were obliterated, and no one could say where stood the Street of the Monasteries or this or that Torrent. Halves of houses were thrown down, showing the furniture standing on the other halves as if they had been shelves; in other houses roofs fell through every story to the cellars, leaving the walls intact and the inhabitants crushed in layers. Nothing stood the shock except the ancient buildings which had stood the great earthquake of 1783 and others earlier, such as portions of the Cathedral, portions of the façade of the Palazzata, and the statue of Neptune, the god of earthquakes, which was left absolutely uninjured, though it has looked top-heavy always. Not a piece was broken of the famous majolica drug-jars made for the Hospital of Messina nearly four hundred years ago in the *ateliers* of Urbino. Our pictures represent the back of the Palazzata and one of the houses which were cut in half.

Photo by] [*Wm. Cutlack*

MESSINA.

The ruined houses of the famous Palazzata.

The Temple of Concord at Girgenti.—This is really much more perfect than the Temple of Segesta, because its inside is complete—more complete than any Greek temple except the

Temple of Theseus at Athens. In the Middle Ages it was the Church of St. Gregory of the Turnips. The Temple of Juno is also fairly perfect, and the fragment of the Temple of Castor and Pollux is unsurpassed in picturesqueness. These temples of Girgenti have an incomparable site. They stand on a rocky terrace half-way between the city and the sea, on the sky-line. The stone of which they are built is quite golden. Girgenti's ancient name was Acragas, and it was known throughout the Greek world as "the Splendid City." Like Selinunte, it was destroyed by the Carthaginians at the end of the fifth century B.C., and its ruins received little attention till the latter part of the last century. Its rubbish-heaps and graves have therefore yielded an immense quantity of terra-cotta figures of the fifth century B.C., but not so beautiful as the Tanagra figures.

Photo by permission of Miss Lorimer, author of "By the Waters of Sicily."

THE TEMPLE OF CASTOR AND POLLUX, GIRGENTI.

The temples of ancient Acragas stand on a rocky terrace between the city and the sea. They gave Girgenti its renown as "The Splendid City."

The Temple of Segesta.—Sicily has forty Greek temples, though some of them are almost past recognition. Of these the Temple of Segesta and two at Girgenti are far the best, except the great Temple of Athena at Syracuse, which stands almost entire, built into the Cathedral. Segesta is the most perfect to the outward eye, though it is a mere shell which was never finished. Unlike most Greek temples, it is inland, high up on a mountain. To visit it, Mr. Leader Williams, the Thomas Cook of Sicily, runs special trains from Palermo. This is the only way it can be visited in a day, and the inn of the neighbouring town, Calatafimi, where Garibaldi won his famous victory, disregards foreigners. Segesta also has a fine Græco-Roman theatre with a view of the temple.

Selinunte, the Sicilian Babylon.—This is, after the handiwork of the earthquake at Messina, the most extraordinary sight in Sicily, for the Carthaginians and the earthquakes between them threw down the third city of Sicily in such fragments that it looks like a sea of fallen walls and broken columns. Two of the temples display evidently the handiwork of the earthquake, for their columns are thrown down almost uninjured in such neat rows that any American city would put them up again in a month. The stones look, in fact, as if they had been carefully arranged for re-erection. One of the temples of Selinunte was the largest Greek temple ever built. The temple shown in the picture is one of the more perfect ones: the grooves of its columns are big enough for a man to stand in. Selinunte has also a well-preserved citadel and a good street of Greek houses, a sort of very ruinous Greek Pompeii. In the spring, between the temples is the most glorious carpet of wild flowers to be found in Sicily, the land of Proserpine.

Iceland.—This bare and desolate island, with its thirty-nine thousand two hundred square miles of barren volcanic rock, lies on the edge of the Arctic Circle, about five hundred miles north of

Photo by] [The Photochrom Co. Ltd.

Photo by] [

THE TEMPLE OF CONCORD, GIRGENTI, AND THE TEMPLE OF SEGESTA

The Temple of Girgenti in the upper picture is one of the most perfect in Sicily. The lower temple was never finished, but its imperfect shell is one of the noblest extant specimens of pure Doric architecture

From Stereo copyright by [*Underwood & Underwood.*

THE RUINS OF SELINUNTE.

If only the Carthaginians and the earthquakes had spared these splendid ruins, Selinunte would possess the largest Greek temple in the world: as it is, the few standing and broken columns show the gigantic proportions.

Scotland and six hundred from Norway. It is three hundred miles in length and two hundred broad at its widest. Its whole geological formation is volcanic, and herein lies its chief interest for the explorer. Thrown up during the tremendous upheavals of a world in the making, its bare rocks rear naked crests into the clear air of the far north, whose chill purity presents so great a contrast to the restless subterranean fires that still disturb the peace of this barren land at frequent intervals. Upon a foundation of palagonite tufa rise endless plateaus of basalt and mountains of trachyte and other volcanic ejections. In Iceland, and in the neighbouring Faröe Islands, the lavas lie in regular parallel strata or terraces whose lines can be traced for miles. The first view of the Faröes is very impressive. One can trace the dip and trend of ancient lava flows from one island to another, and see how the force of the Atlantic breakers that beat upon this cruel coast has broken down the connecting links formed between one and another. There is the dome-shaped block of the Lille Dimon (Little Diamond), the perpendicular rock walls of Skuo, and on entering the fjord that leads to the seaport of Trangisvaag, on the Isle of Sudero, a splendid view of cliff and mountain is obtained. These mountains are wonderful specimens of jointed basalt; the lava flows can be traced for miles in lines that are almost horizontal. Here, too, the cloud-effects are peculiarly beautiful; the warm sea airs of the Atlantic are caught and condensed upon these grim grey cliffs and pass along their faces in wreaths and feathers of pale vapour.

Iceland is rich in treasures for the geologist. Here he can see the work of ice and weather. Volcanic fires and the erosion of water together have carved out a landscape unique, and instinct with an awful grandeur. Glaciated lava, ropy lavas, lava that is grassed over and fertile, lava in hummocks on which no living plant can find a home, is here to be seen. And volcanic vents, fissures and cones, great boulders and "perched blocks" poised in impossible situations, and geysers and hot springs for ever at work.

By the Photochrom Co., Ltd.

THE LEANING TOWER OF PISA.

The chief beauty of this Campanile or Bell Tower, lies, not in its peculiar slant (which is due to the instability of the subsoil rather than to any pre-conceived idea of the Architect), but in the beautiful colonnaded galleries which rise tier upon tier to the full height of the Tower. The carrara marble of which they are built has a transparency which causes it to glow in the bright sunlight. In full noon it is of crystal brilliancy, but when flooded with the glory of the Italian sunset it takes on all the rich colouring and tints of the sky.

Hecla is its greatest fire-mountain, at present sleeping like a monster exhausted, but not to be trusted for all its years of quiescence. There are eighteen recorded eruptions, the last in the middle of the last century, but the intervals have always varied greatly, from five to as much as seventy years. Its height, which is about five thousand feet, varies with every eruption; sometimes its upper cone has been completely blown away, and at others has been built up anew of the material ejected from its fiery heart. Most of the mountains of Iceland are volcanoes, no fewer than twenty-five having been active in the course of its history, which covers a period of a thousand years. The greatest volcanic outburst on record was in 1783, in the north-west corner of the Vatna-jokull. Two great lava streams, one fifty and the other forty miles long, and a hundred feet deep, covered about four hundred square miles of the more cultivated part of the island, and are said to have caused the destruction of one-sixth of the inhabitants and one-half of the livestock.

The geysers of Iceland are famous for their constant activity, the finest being those at Geysir, though those of Hveravellir are perhaps the most beautiful. This is like a peep into fairyland. After crossing a cruel country of sandy deserts and rough moraines, with swift rivers to ford and hummocks to scramble over, one enters on a grass land intersected with sinter terraces, on which from a series of hot-springs and fumaroles azure-blue water trickles down and is caught in natural basins with most lovely effect. The small geysers erupt at very short intervals, throwing steaming water three or four feet up into the air.

At Geysir there are great boiling cauldrons where one can stand on the crisp sinter ring surrounding each and gaze deep down into the very blue water in the funnel. The Great Geyser has a diameter of about one hundred feet, and its funnel is sixteen feet across at the surface. The ring of sinter which surrounds the crater is raised ten or fifteen feet above the level of the ground. It erupts as a rule once in twenty-four hours, with a dull thud and subterranean rumblings, when a huge column of boiling water is violently ejected and flung to a height of seventy or eighty feet.

Photo by] [*A. Klinck-u. Lom*

THE EXTINCT CRATERS OF ICELAND

The whole of Iceland has been formed through volcanic agency, and during the course of its known history twenty-five active volcanoes have appeared. The extinct craters on the island are numerous

Stream after stream spouts up, to fall in showers and meet and fight with the ascending volumes, this stupendous fountain being crowned by rolling clouds of hissing, roaring steam. After two or three minutes the uproar subsides, the water sinks down into the funnel, and all is still once more.

Fine specimens of lava caves are to be seen at Surtshellir, which has a remarkable series, probably due in the first instance to a big bubble formation in the lava flow. Lateral pressure must have forced up the roof, and the caves so formed were then enlarged and deepened by the erosion of water, a subterranean river having until comparatively recent times flowed through these caves. It has now evidently made a lower channel for itself and has left these caves dry. They lie close to the great ice-covered Eyriks-jökull, one of the highest mountains in Iceland, and there are snow-drifts in these caves all the year round.

The Belfry of Bruges.—The Belfry of Bruges is a Gothic tower dating from the sixteenth century. The effect of its two hundred and ninety feet of height is accentuated by the modest appearance of the low building to which it is attached. Les Halles, a picturesque fourteenth-century

THE GEYSERS, ICELAND.

Iceland has always been famous for her geysers. The largest, as its name implies, is the Great Geyser, which has a diameter of 100 feet, and erupts about once in twenty-four hours.

market-hall, was built to house the cloth merchants of Bruges. In the Middle Ages the town was the great commercial centre of Europe. The trade of the world passed through its markets. It was a *staple* of the Hanseatic League in the thirteenth century, and was, besides, the chief exchange of the trade in wool and cloth with England. This explains the dignity of the building erected to house the worthy mediæval cloth merchants. But the commerce of Europe now flows in other channels: the traders of Genoa and Venice have long ceased to flock here to barter the products of Italy and the East for those of Northern Europe; and the Municipal Offices of Bruges are now housed in the ancient hall of the cloth-makers. The other wing of the building is still a meat market, as in the days of Bruges' prosperity, when the Counts of Flanders made it their chief place of residence. Its splendour was at its zenith in the fifteenth century, when the Dukes of Burgundy fixed their court here; and the great Belfry is a monument of those brilliant days. It contains the finest chimes in Europe. They are not niggardly with their music. Every quarter of an hour they are played by machinery, and three days a week they are played by hand at midday. The machinery which works this monster carillon can be seen, near the top of the tower, in a spacious chamber. An enormous copper drum, which acts somewhat like the barrel of a musical box, operates the keys of the instrument.

Photo by permission of] [*Col. Ferryman.*

MOUNT HECLA

Photo by] [*A. Klinckowström.*

BASALTIC COLUMNS, FARÖE ISLANDS.

Of the same origin as Iceland, that is to say, volcanic, these islands exhibit curious formations caused by the ancient lava flow, among which the long ridges of columns of jointed basalt are most conspicuous.

There is a wonderful view of the surrounding country, spread like a panorama beyond the high-peaked roofs of the town, to be obtained from the top of the Belfry.

Monte Rosa.—There can be no two peaks in the world whose majestic outlines are better known than the two giants of the Pennine Alps, Mont Blanc and Monte Rosa. This portion of the Swiss Mountains has always been acknowledged the most important, not only on account of their unrivalled altitude, but because from their position on the boundary line between Switzerland and Italy they dominate the landscape from so great a tract of country. From the whole of the plain of Upper Italy, from Turin to Milan, and even so far south as the slopes of the Apennines, Monte Rosa with her attendant group of peaks towers up on the northern horizon; while from all the heights of Western Switzerland she is commonly a conspicuous object upon the eastern skyline, though a little overshadowed on that side by the yet more impressive outlines of Mont Blanc. From that portion of the main chain which connects Mont Combin with Monte Rosa the peaks that branch away northward stand only less to the unsurpassed magnitude of the giants whose satellites they are. The ranges that spread south and east from Monte Rosa on the Italian side are gentler and less rugged.

The first ascent of the main peak of the mountain was made in 1855 by a party of Englishmen with guides. Although the height of its principal peak, the Dufour, is fifteen thousand two hundred and seventeen feet, the climb is not attended with great difficulty or danger, and can be done in ten hours from the Riffelhaus, the best point from which to make the ascent; from Zermatt the distance is greater. The Gorner Glacier, one of the principal ice-streams that sweep down the flanks of the Monte Rosa range, is of great magnitude.

Milan Cathedral.—The Cathedral of this, the great northern metropolis of Italy, is unique amongst the cathedrals of Europe. The daring conception of the mind which created this vast

forest of spires and cusps and pinnacled saints holds the imagination in awe. For the whole building is of vast dimensions and the exterior bristles with every conceivable ornament that could be devised for the further adornment of the Perpendicular Gothic. But the reader must forget the usual characteristics of Gothic architecture if he is to gain any inkling of the appearance of Milan Cathedral. Here he is confronted with the modern Italian efflorescence of this exclusively northern style. Let him imagine a bride-cake tricked out in all the fantastic elaborations of the sugar-artists, the white pinnacles rising at every point possible, each bearing a number of canopied niches for the occupation of white statuettes, pierced ribs connecting the outposts of the edifice with the main body, which is itself elaborately crested with more pierced work. Imagine, also, a cluster of slender pinnacles rising up at the point of junction of the four branches of the pile, reaching to a height that threatens the destruction of the delicate spires by their own weight, and finally one last pinnacle reaching up to the very skies. Such a picture gives no inaccurate idea of the great Cathedral, save that here the material is fine marble and the immense building, built in the shape of a Latin cross, has a length of four hundred and eighty-six feet and a breadth of two hundred and fifty-two feet. Despite its over-decoration, however, this great white temple fascinates the eye with its extravagant beauty and compels the admiration. It is a bewildering task to attempt a detailed study of the carved work or the six thousand statues and the varied gargoyles which are lavished on the building; but the interior is a strange contrast to the exterior. Here all is simple Gothic, that creates an impression of might, of vast spaces and lofty aisles and fitful lights gleaming in the dark recesses of the chapels. The effect of the transition from the dazzling intricacies of the exterior to the dim religious light and magnificent solemnity within is indeed startling.

The present building occupies the site of two more ancient churches, and was commenced

Photo by] [A. Kronkowstrom.

A BASALTIC FISSURE, FAROE ISLANDS.

One of the deep gorges made by the sea as it cut its way through the lava flow which had been piled mountain high by some forgotten eruption

by order of Gian Galeazzo Visconti, the great Duke of Milan, in 1386, but for centuries the building remained incomplete until Napoleon I., in 1805, finished the work so long begun. Save for St. Peter's in Rome, this is the largest church in the world.

The most interesting part of the exterior is the western façade, which is of the sixteenth century, and of Italian workmanship. The dedication of the church to the Virgin is here inscribed, and the beautiful modern bronze doors enhance the marble lacework of the ornament.

THE BELFRY, BRUGES.

Attached to a building called "Les Halles" (not the town hall, but a market place for cloth and flesh), this tower possesses the finest peal of bells in Europe. They number forty-eight, while the tower itself is 353 feet high.

In the crypt-like chapel under the central altar is the tomb of San Carlo Borromeo the patron saint of Milan, who was, indeed, worthy of the high honour bestowed upon him by the Church. This tomb is exceedingly sumptuous, wrought of silver and crystal and holds the richly-clad body of the saint in his episcopal vestments encircled with magnificent jewels. The sacristy also contains many valuable chalices, etc., which include a ciborium of Benvenuto Cellini, besides many heavily-jewelled vestments.

Eleusis.—In the little village of Lefsina, a short distance from Athens the ruins of the famous Temple of Demeter, known to the world as the Temple of Eleusis, are to be seen. And this is where the Greeks have located the legend of the Goddess, that is the most beautiful and touching story in all their mythology. It was at this Temple that the great Eleusinian Mysteries were enacted.

The story of the abduction of Cora by Pluto, the King of the Lower World, and the despair of her mother Demeter, who left Olympus to seek her vanished child, is too well known to need repetition here. Also that, at the command of Zeus, Cora was permitted to spend a portion of the year, the spring-time, with her mother upon the earth, on condition that she duly returned to her lord in the dim caverns of the underworld. For the Greeks, as Decharme has beautifully said, "Nature was full of passionate and living energies, of divine forms sensible of joy and sorrow, and the different phases of vegetable life became in their eyes the wondrous acts of a drama which was at once divine and human." Thus we see at once the meaning of this touching legend. "It arose from the sight of the phenomenon of vegetable life, from the mourning of Nature during the winter, followed by the new birth of Spring. . . . The annual descent of Cora into the lower world and her return to the light symbolized the seed falling upon the earth and disappearing into its bosom, and the coming

Photo by] [*Donald M. Leish.*

MONTE ROSA.

The great mass of Monte Rosa rises from the Pennine Alps to a height of over 15,000 feet. The highest of its peaks is the Dufourspitze.

Photo by] [*Donald McLeish.*

MONTE ROSA.

A view of the Rimpfishhorn from the Allalinhorn. It is only from a close view of the mountain that its great height and the vast extent of its snowfields can be realized.

to life again and flourishing in spring; the grief of Demeter, bereft of her child, represents the desolation and barrenness of the earth during the winter. To this assemblage of physical notions was soon added moral ideas of a loftier kind; the life and death of man, and even the problems of the destiny of mankind were linked with the vicissitudes of the earth, with the life and death of Nature; soon the thought of the future life prevailed over the touching story of the Divine Tragedy, and the combination gave birth to the Mysteries of Eleusis." (Ch. Diehl.)

The whole story of Demeter's wanderings may be read in the beautiful Hymn to Demeter, discovered about a century ago in a library in Moscow, the author of which was evidently one of the initiated. He makes plain the lofty aim of the Mysteries, and closes his hymn with these remarkable words: "Happy among the dwellers upon earth is he who hath beheld these Mysteries: but he who is uninitiated and hath no part in these rites hath never the like Destiny, even when Death hath made him descend into the gloom of the lower world."

Unhappily the severe prohibition laid upon all who visited Eleusis and were witnesses of all or part of the holy Mysteries, or saw the sacred buildings, to speak of what they had seen has left us with no written descriptions to aid modern research. Even Pausanias is silent on this point. It was not till 1882 that the Athenian Archæological Society began the serious excavation of Eleusis. Their work enables us now to ascertain the plan of the buildings and form a fairly accurate idea of the festivals held in honour of the Goddess and the organization of her priesthood. Many beautiful objects of art have been discovered in the ruins. But, unfortunately, of the more significant and intimate part of the worship, the inner mysteries reserved for the few, which existed beside the public adoration of the Goddess our knowledge remains imperfect. "They seem to have formed," says M. Rehan, "the really serious part of the religion of ancient times; and they exercised a strong attraction and considerable moral influence over the pious souls of those days."

The most important building yet unearthed at Eleusis is the great Hall of Initiation, built in the fifth century B.C. under the direction of Ictinus. Unlike the ordinary Greek temple, it has neither pronaos nor cella. It was reckoned one of the masterpieces of the Periclean Age. It was

two hundred and twenty-three feet long by one hundred and seventy-nine feet wide. Four rows of columns in parallel lines divided the interior space, an arrangement which must have prevented the spectators from seeing the exhibition of the Mysteries as a whole. There were eight tiers of stone seats all round the Hall, capable of accommodating three thousand people. A cupola roof was built later by Xenocles, with an opening in the centre to give light. No pillars decorated the façade until Philon, the architect, in the time of Demetrius of Phalerum, added a pronaos with twelve pillars. The Temple stood in a large enclosure.

Grindelwald.—Grindelwald is situated in the Bernese Oberland, at an altitude of more than three thousand four hundred feet. It is perched, as it were, upon the very shoulders of the great mountains, which thrust their dauntless heads into the clouds thirteen thousand feet above the level of the sea. The history of this fertile valley goes back to the Middle Ages; it commences with the establishment by certain feudal lords of a small community of their people to graze their cattle here. And these simple inhabitants of the valley continued from one generation to another to pursue their peaceful avocations indifferent to any change of master. They became at one time the vassals of a monastic house in Interlaken, and after the Reformation were taken over by the Canton of Berne; but these changes practically left them undisturbed. Each family had its little bit of property, a chalet and a field or two, with grazing and wood-cutting rights over the forest land. But there came a day when the professors of the universities of Berne and Zürich began seriously to study glaciers and to appreciate their importance in the making of a world. They went up into the heart of the mountains to look at them, up to the little village of Grindelwald, nestling beneath the mighty shadow of the Wetterhorn and sentinelled by that great trio, the Jungfrau, the Eiger and the Mönch. It became the fashion for the Swiss professors of the seventeenth century to go up there, and their advent caused inns and guest-houses to be added to the chalets of the natives. And

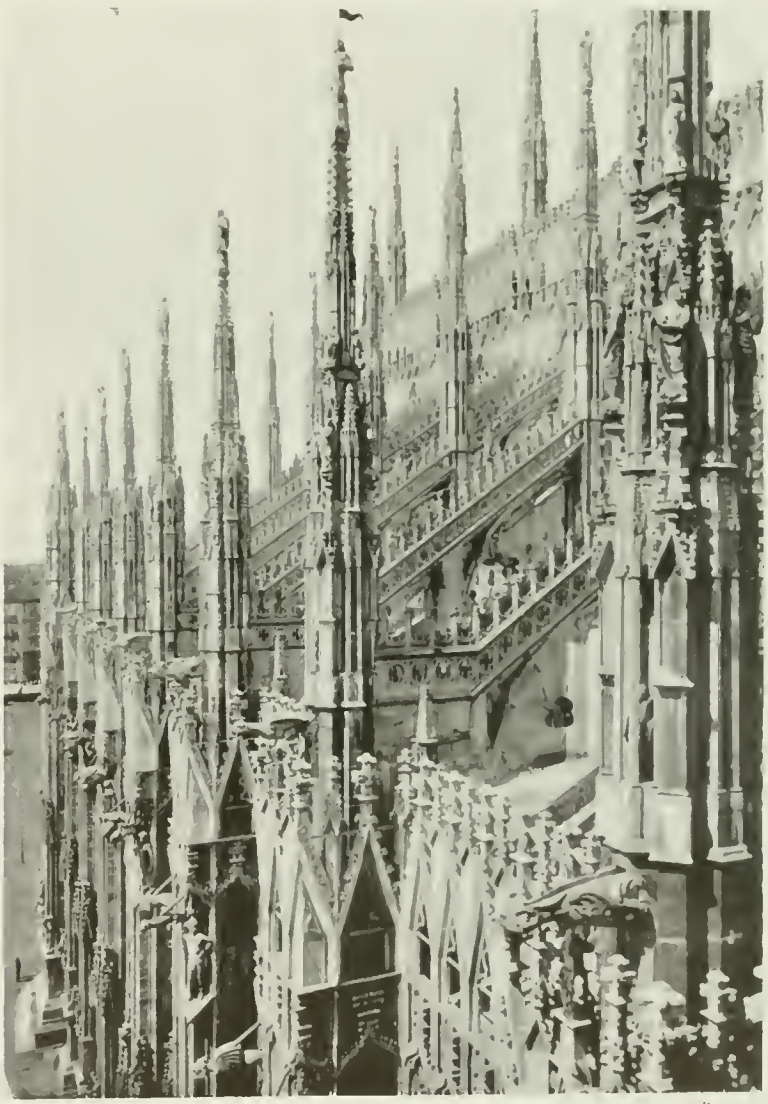

Photo by] [*Brogi.*

MILAN CATHEDRAL.

Few pieces of architecture are more wonderful than the roof of Milan Cathedral, with its countless marble pinnacles and its fretted buttresses.

Photo by] [*Brogi.*

MILAN CATHEDRAL.

The Great Napoleon's name is indissolubly connected with this noble building, for in 1805 he commanded it to be completed, after a period of delay which was nearly four and a half centuries. It is composed entirely of white marble, and its pillars are adorned with niches which hold the statues of over 6,000 saints.

the professors wrote books, surprisingly inaccurate, about the ice and the snow-crystals and the mountains and the rocks and the glacier streams which they saw there. And in 1642 Matthew Merian published a view, a very quaint view, of Grindelwald; and thus it became famous. And men turned their eyes longingly to the high peaks and began to think and to talk of climbing them. After many more or less incredible stories of ascents and adventures, we find three generations of one family, the Meyers of Aarau, connected with these Oberland Mountains. Johann Rudolf Meyer drew maps of them, helped by a German who had crossed the Oberaarjoch in 1795. Then two sons of Meyer, Johann and Hieronymous, managers of a ribbon factory, were seized by a desire to "learn the relations between the various vast basins of eternal snow," and also to "ascertain whether the peaks which rise out of them could be ascended." This question was partially solved by their ascent of

Photo by] [*The Photochrom Co., Ltd.*

ELEUSIS.

These ruins at Lefsina, a village not far from Athens, are all that is left of the famous Temple sacred to Ceres. All Greece came to this most sacred shrine. The Great Hall of the Initiation was reckoned to be the masterpiece of the Periclean Age.

the Jungfrau (thirteen thousand six hundred and seventy feet) in 1811. It proved a feat of immense difficulty, but they accomplished it a second time the following year to prove the truth of the first and to convince the doubters of their prowess. The difficulty of the climb may be deduced from the fact that it was only scaled four times in the next forty years; but since 1851 it has frequently been conquered.

For a general view of the Grindelwald valley and the giants that tower above it, the Ridge of the Scheidegg is hardly to be surpassed. Looking northward there is the broad summit of the Wetterhorn dominating the scene, with its rocky peaks and gleaming snow-fields. And beyond the Great Scheidegg the view is bounded on the north by the Schwarzhorn range; while on the extreme left rises the Faulhorn's blunt head. Southward lie the splendid trio, the Eiger, the Monch, most ascetic of monks, and the Jungfrau, the most beautiful, placid, cold and chaste young woman in the world. All these are over thirteen thousand feet in height. The Eiger's thirteen thousand and forty feet were first ascended in 1858 by Charles Barrington. The Gross Schreckhorn, thirteen thousand three

hundred and eighty-five feet, was first conquered in 1801 by Sir Leslie Stephen, and presents very great difficulties to the climber. The inaccessible peak of the Mönch likewise is but rarely scaled. But the sense of wonder and awe when the intrepid traveller finds himself up among the very peaks and pinnacles that pierce the roof of the world must be an unforgettable experience in the life of any man.

From Stereo copyright by] *[H. C. White Co.*

GRINDELWALD.

One of the most beautiful and famous valleys of the Bernese Oberland.

Strasburg.—The town of Strasburg, the capital and the seat of Government of the twin provinces of Alsace and Lorraine, presents very striking and curious contrasts in appearance. No town in all Germany, except Berlin, can show so many handsome new buildings as the new town, which was largely rebuilt after the bombardment of 1870: but in the old town, one passes through narrow, irregular streets, from which the high-pitched old German roofs shut out the sunlight, and the pure Gothic of the Minster spire soars into the sky as it has done for four centuries. Here the quaint aspect of a mediæval city has been perfectly preserved. The Cathedral itself is the product of four centuries of beautiful work. Part of the crypt dates from 1015. In the apse the transition from Romanesque to Gothic is plainly to be seen. And the pure Gothic of the fine nave is the work of 1275 and the years following. The west façade is decorated with a singular screen of double tracery, giving an effect of wonderful richness and elaboration. The original design is owed to Erwin of Steinbach, circ. 1315, but the upper portions were the work of another hand, and were slightly different. The intricate openwork of the spire shows like lace against the sky: it dates from 1435. The whole building is rich in sculptured ornament. A curiosity to be seen in the interior is an astronomical clock, made in 1838, in which is incorporated part of the famous clock built by Dasypodius in 1571.

From Stereo copyright by] *[H. C. White Co.*

GRINDELWALD.

A mighty rock detached and carried down the valley by the force of the glacier.

It was at Strasburg that Napoleon III. made his first ineffectual attempt to recover the vast powers gained and lost by the founder of his dynasty. And the town will always be notable for the dramatic siege of 1870, when after seven weeks the garrison of seventeen thousand surrendered to the German besiegers, and the nationality of the provinces was thenceforward changed.

Stromboli.—The volcano of Stromboli is the natural lighthouse of the Mediterranean. Its great truncated cone rises from the sea to a height of three thousand feet. It is situated in the Lipari Isles, about twenty miles north-east of Lipari itself. It possesses a very special interest for the student, as being the only volcano in Europe

in a permanent state of activity. And a fact that adds much to its value in this connection is the position of the crater, which is placed at the side of, and some distance below, the summit of the cone. It is actually a parasitic crater or blow-hole which the perpetual activity of its subterranean fires has forced through the wall of the original cone. Thus, seated upon an elevated point above it, the observer can watch for hours the changes and operations going on deep down within the crater's mouth. Such observations undertaken in 1788 by Spallanzani marked an epoch in the science of vulcanology and furnished some of the most striking and important data on which the modern science rests. Mention is first made of Stromboli, then active as now, in the fourth century B.C. So it was prior to that time that the floor of the ocean was broken up and the mass of volcanic ash and rock thrown up which forms the great mountain that we now see. The Lipari Isles show several eruptive centres dating from different periods.

Mr. Johnstone-Lavis, the scientist, who has devoted much study to the volcanoes of the South Italian area, has thus conjectured the circumstances of the birth of the mountain :

" One day, possibly during a dead calm, a frightful struggle commenced between fire and water. One can imagine an immense column of water rising as from a gigantic torpedo explosion, accompanied by clouds of vapour and fragments of rock, shutting off the light of day. On the surface of the sea dark irregular waves covered with pumice, algæ and dead fish rolled towards the shore. At night great columns of smoke illumined by lightnings and showers of red-hot stones showed like an immense flame rising from a terrible conflagration. The enormous column of dust, rock fragments and lavas accumulated and rose above the surface of the sea, forming an island from which the lava continued to flow."

More than the half of Stromboli's circular bulk is submarine, standing firm upon the floor of the ocean. From the crater a remarkable slope, known as the Sciarra del Fuoco, leads

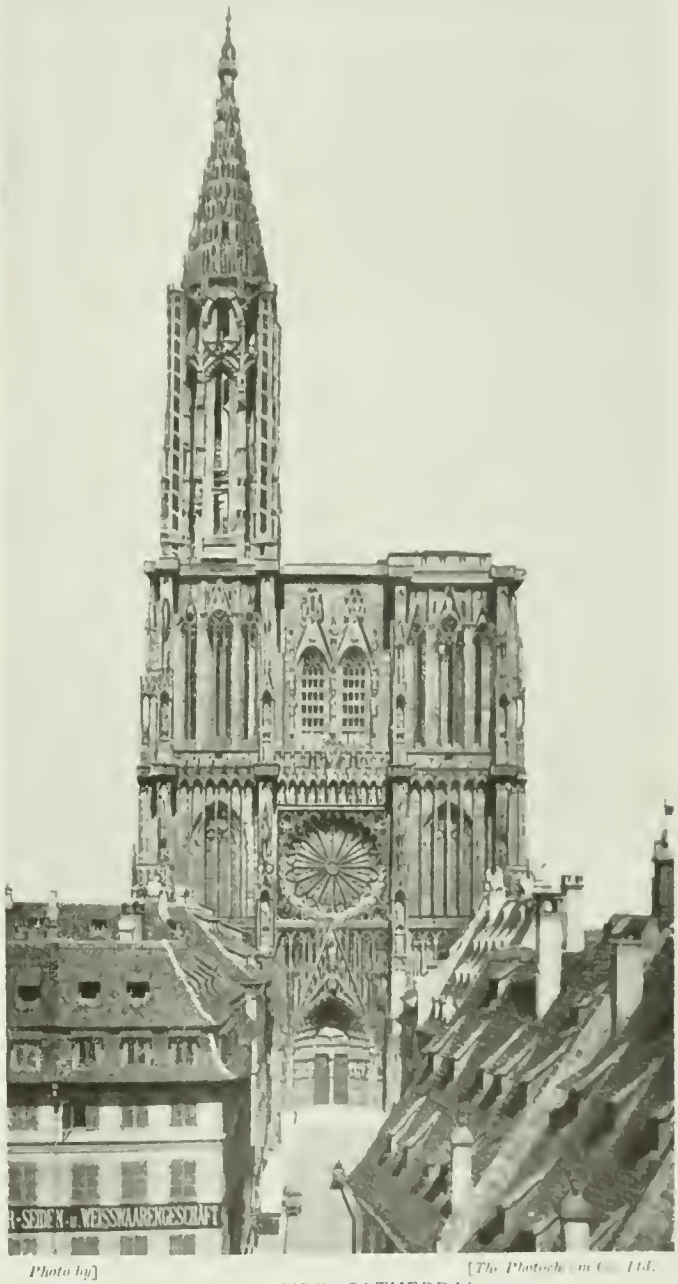

Photo by] [*The Photochrom Co., Ltd.*

STRASBURG CATHEDRAL.

Built during the eleventh and twelfth centuries, this Cathedral is one of the sublimest specimens of Gothic. Only one of the western towers was completed. It is of open stonework, and is 466 feet high.

down to the water's edge. Down this slope roll the stones, rocks and lava ejected from the mouth. There are always many active blow-holes, vents and small cones, from which showers of lava fragments are thrown.

St. Martin's Cross, Iona.—Of the monuments still standing to witness to Celtic civilization, the cross near the west door of the Cathedral of Iona is amongst the most notable. The island was chosen by St. Columba for the settlement of the little company of missionaries who were to preach Christianity to the rough inhabitants of these wild isles, and to this circumstance Iona owes its fame and its beautiful cross. At a later date was founded the Cathedral of St. Columba, and here the bones of the saint were laid to rest, so that soon this acre of God became renowned for its sanctity, and the bodies of kings and princes were carried hither from over the seas for sepulture. Celtic art was employed to commemorate the dead, and as many as three hundred and sixty crosses were standing prior to the Reformation. But iconoclastic fanaticism destroyed the greater part of these beautiful relics; only the great cross erected to the memory of the saintly Bishop Martin of Tours, in the sixth century A.D., has survived destruction. It is carved out of a block of mica-schist resting upon a pedestal of red granite and reaches to a height of fourteen feet.

ST. MARTIN'S CROSS, IONA.

Celtic civilization existed both in pre-Christian and early Christian times. This cross was raised as a monument to the saintly Bishop Martin of Tours in the sixth century A.D. It is a splendid example of late Celtic sculpture.

Versailles.—In the forest of Versailles, in 1624, a hunting lodge was built for Louis XIII. Its solid square of stone and brick was preserved and incorporated in the Cour Royale, the main courtyard of the great palace built on the same site for Louis XIV. The natural beauties of these woods have been taken full advantage of by those who planned the lovely gardens surrounding the palace, and the whole remains the popular *beau idéal* of what a kingly palace and its pleasure grounds should be. It became the residence of the whole Court of Louis XIV. and the seat of the Government. It had accommodation for a thousand inmates, and the total cost of the building and the laying out of the gardens is estimated at nearly twenty millions sterling. Its upkeep in its great days must have cost over one hundred thousand pounds a year. Within the palace the most poignant interest attaches to those rooms with which the ill-fated Queen of Louis XVI. is particularly associated. These are on the first floor. Running across the width of the main projection of the palace, looking over the beautiful terraces of the garden from its seventeen large windows, is the famous Galerie des Glaces. Opposite the windows are the great Venetian mirrors from which it takes its name, set in carved and gilded frames. Here all the Royal receptions took place. Leading out of it on one side is L'Œil-de-Bœuf, with its oval window, where the courtiers used to await the summons of the Monarch. Beyond this are the Queen's *appartements*: the bedchamber of Marie Antoinette, her *salon*, and the Salle des Gardes, which was invaded by the mob from Paris, headed by the *dames des Halles*, on the fateful 6th of October, 1789. Adjoining are the severely simple little *cabinets* in which Madame de Maintenon lived, and from which she ruled the heart and guided the conscience of the great Louis XIV.

Photo by] *[Underwood & Underwood.*

STROMBOLI.

Stromboli is the natural lighthouse of the Mediterranean. It is situated in the Lipari Isles and rises from the sea to a height of 3,000 feet, and is the only volcano in Europe in a permanent state of activity, with its crater at the side of and some distance below the summit of the cone.

Photo by] [*Neurdein Frères.*

THE PALACE, VERSAILLES.

Photo by] [*The Photochrom Co. Ltd.*

THE FOUNTAINS, VERSAILLES.

This wonderful palace was built by the great Louis XIV. It held accommodation for 1,000 inmates, and the total cost of the building and the laying out of the grounds is said to have been over £20,000,000. The fountain shown is that called "the Latona Fountain."

APPENDIX.

By PHILIP E. SERGEANT and F. W. CHRISTIAN

The Kaaba and Mahomet's Tomb, Mecca.—The strange building which has made the word Mecca synonymous with a place of pilgrimage is a direct lineal of one of the oldest shrines, probably in the whole world. At any rate, long before the days of Mahomet, and as far back as its existence can be traced, Mecca was a place of sanctity and of sanctuary to the inhabitants of all the surrounding region of Arabia. When the Prophet arose and founded his new religion he was not obliged to invest his birth-place with a new holiness, but had merely to adapt to his own ends that holiness which it already possessed. In doing this he took under his protection the Kaaba (*i.e.*, "the cube"), the centre of the ancient heathen worship of the local Arabs, destroying the idols but retaining much of the old ritual of the shrine and the old black stone fetish which was the most valued possession of the spot. According to tradition, which there is no reason to doubt, the original shape of the Kaaba has been preserved, although it has been necessary to rebuild it several times. It is described as a rough cube of about forty feet each way, built of stone, without windows—though on this last point there is some uncertainty, as windows are said by some to have been added. Into the outer wall of the south-east angle is built the famous stone, which every pilgrim kisses. At one period in its Mahomedan history it was carried off by foes of Mecca and held for twenty-two years. It was also once damaged by fire and broken, so that now it has silver bands to hold it together. But its sanctity is unimpaired in the eyes of the pious visitor, who believes that Abraham received it from the hands of the archangel Gabriel.

Photo by permission of] [*G. P. Bevan, Esq.*

THE KAABA AND MAHOMET'S TOMB, MECCA

The great black stone fetish, called the Kaaba, dates from a much more ancient origin than the religion of the Mahomedans, although it is held in greater veneration owing to its adoption by the great Prophet as a shrine of peculiar sanctity, while in a corner of the mosque area is the tomb of the great leader of Islam.

Abraham, too, with Ishmael's help, is credited with the building of the Kaaba, the original associations of the shrine being thus overlaid with a coating of orthodox legend. In the same way the "cube" itself is transformed. Annually its outer walls and door are enveloped in a rich brocade veil; while the whole of the interior has been permanently covered with marble, gold, and silver, which would be a strange contrast with the walls of rude stone, could they be seen.

In the mosque-area which contains the Kaaba there is also the tomb of Mahomet. The Prophet died in the house of his favourite wife, Ayesha, the door of which led from the courtyard of the mosque. When a dispute arose as to where he should be buried, Abu Bekr, his successor, declared that he

Photo by permission of [*Major Sykes.*

MESHED.

This is the holiest shrine in Persia, for it is the burial-place of Imam Reza, the eighth of the twelve Imams whom the Shia sect of Mahomedans reverence next to Mahomet himself. The mosque itself is very beautiful, with the dome above the marble tomb of the Imam covered entirely with gold.

had heard from Mahomet's own lips the saying that wherever a prophet died there should he be buried. And so the house of Ayesha became the cemetery of the founder of Mahomedanism. Here, too, later, were interred the bodies of Abu Bekr and the Caliph Omar.

Were it not for the Kaaba, the black stone, and the additional holiness acquired through being the burial-place of the Prophet, Mecca would have decayed out of existence long ago. It is the pilgrims who provide the livelihood of the inhabitants of this mountain-locked, almost inaccessible town, deserted by trade of any importance since caravans ceased to be the great transport agency of the world. Attempts to compute the annual number of pious travellers who come to Mecca have arrived at very diverse figures. But seventy thousand have been reckoned to pass through the main ports or stations on the way to Mecca, so that the total number must be considerably greater.

Meshed, Persia's Holiest Shrine. — Meshed, capital of the Persian province of Khorasan, has had an eventful history, chiefly owing to its nearness to the frontier, which has made it peculiarly subject to the attacks of foreign invaders. Its fame, however, is not due to this fact, nor yet to its possession of a main street nearly one mile and three-quarters long in a straight line (unexampled in the East), but to its being the burial-place of the Imam Reza, the eighth of the twelve Imams, or prophets, whom the Shia sect of Mahomedans reverence next to Mahomet himself. The saint was buried at Meshed in the ninth century A.D. According to one account, he died of poison secretly administered to him by the jealous Caliph Mamoon, son of Harun-el-Rashid. Anyhow, Meshed (Mashhad) means "Place of Witness," or "Martyrdom." But the elevation of the tomb into a centre for pilgrimage was partly political. When the Shia doctrine became

the established religion of Persia seven hundred years after the Imam Reza's death his sepulchre and the mosque near it (built by the wife of Shah Rukh, son of the great Timur) were made to take the place of Mecca for the Shia world, the Turks being masters of the territory on which the tombs of the still holier Ali and Husein stand. It is said that over one hundred thousand pilgrims visit Meshed annually, and there is a great virtue to be acquired by being buried in the town, which is consequently full of cemeteries.

The shrine itself stands behind a quadrangle, one hundred and fifty paces square, with rows of alcoves running along the north, south, and west sides. In each of these three sides is a gigantic archway, that on the west being the most notable. Over this is the cage for the *muezzin* when he gives the call to prayer, and outside it a minaret one hundred and twenty feet high. Eastwick, who visited the mosque early in the second half of last century, says that the beauty of this minaret cannot be exaggerated, with its exquisitely-carved capital and a light pillar on the top of that, the pillar and the shaft below the capital being covered with gold. In the centre of the eastern side of the quadrangle, he says, two gigantic doors admit the people into the inner mosque, where is the marble tomb of the Imam, surrounded by silver railings with knobs of gold. The dome above is covered entirely with gold, and a gilt minaret rises on either side. As is usual with Mahomedan shrines, it is practically impossible for unbelievers to approach near enough to get any idea of the beauty of the place.

The Ruined Palace at Ctesiphon.—There are but scanty remains nowadays on the east bank of the river Tigris of Ctesiphon, the mighty capital of the Sassanian dynasty, which made Persia into a power feared by the Emperors of Rome and only succumbed in the end to the onslaughts of the fanatical Mahomedan Arabs in 637 A.D. The little that remains, however, is a stupendous piece of work, than which few indeed of the world's buildings are more imposing. To-day the

Photo by permission of [Sir Wallace Bt

THE PALACE OF CTESIPHON

There are few remains of the mighty Sassanian dynasty; but the palace built by Chosroes I., the glory of his race, still witnesses to the splendour of his reign. It is possible that the east end of the vast hall here shown was only closed with an embroidered curtain, which legend describes as a work of great beauty.

Photo by permission of] [*Sir William Wilcox.*

THE PALACE OF CTESIPHON.

Only the enormous vaulted hall and part of the east wing shown here are now standing, but this mighty vaulting, with a span of over eighty-five feet and no support whatever, is a triumph of architecture.

fragment of the Sassanian palace is known as the Takhti-Khesra, or "Throne of Chosroes," from Chosroes I., the great king who combined into one city the Ctesiphon of his predecessors, the old Greek capital of Seleucia (on the opposite bank of the Tigris), and a new settlement planted by himself and filled with the inhabitants of the captured Syrian Antioch. Chosroes had another residence, the "White Palace," about a mile away from the present ruin; but all of this disappeared a thousand years ago. The remnant of building represented in our photograph consists of an enormous vaulted hall and the east wall of one of its two wings. The vault spans over eighty-five feet and has no central supporting beam whatever, yet has survived nearly fourteen centuries. According to an Arab historian, when the Mahomedans sacked Ctesiphon they secured among other booty a veil, or carpet, no less than seventy cubits long by sixty wide, which was used to hang over the open eastern end of the vaulted hall and was worked with gold and silver thread and precious stones to represent the picture of a garden. If this story be true, therefore, there never was a wall at the eastern end of the great hall, but only the veil, which could be lifted or let down to admit or shut out the sun. Of the ruined mass as it now stands, Miss G. Lowthian Bell writes: "The great curtain of wall, the face of the right wing, rises stark and gaunt out of the desert, bearing upon its surface a shallow decoration of niches and engaged columns which is the final word in the Asiatic treatment of wall spaces. Tradition has it that the whole wall was covered with precious metals." Needless to say, no trace of these metals remains now.

Bas-Relief on the Ishtar Gate, Babylon.—One of the principal discoveries of the German excavations on the site of Babylon during the past dozen years has been the "Gate of Ishtar," as it has been named. Along the east side of Nebuchadnezzar's vast palace ran a wide processional road, intended for religious ceremonies, etc. At one point this road contracts, and that is where the double gateway was erected midway between the palace and Ishtar's temple. Miss G. Lowthian Bell, who visited the excavations recently, describes this gate as the most magnificent fragment that remains of all Nebuchadnezzar's constructions, and its brick towers, which the German excavators have laid completely bare, as rearing their unbroken height in stupendous masses of

solid masonry. These towers, she says, "are decorated on every side with alternate rows of bulls and dragons cast in relief in the bricks; the noble strength of the bulls, stepping out firmly with arched neck, contrasts with the slender, ferocious grace of the dragons, and the two companies form a bodyguard worthy of the gate of kings and of gods." Each of the bricks of which the towers are built has the name of the great architect Nebuchadnezzar upon it; and the same is true of the brick-tiles which line the walls on either side of the whole Sacred Way. A procession of lions appears on these tiles, which are enamelled over by some process of which the secret is lost. When the unearthing of Babylon is completed we shall doubtless have many additions to our knowledge of antiquity, but there can scarcely be anything more artistically great than these bas-reliefs of the Ishtar Gate and Sacred Way.

Easter Island and its Stone Colossi.—This grim, solitary outpost of Eastern Polynesia, lying about two thousand miles from the South American coast, receives its name from its discovery on Easter Day, in 1722, by the Dutch navigator Roggewein. Its old native name is *Te Pito o te Henua*—the *Umbilicus Terræ*, or Central Point of the *Henua*, or Land-Tract—and its ordinary Polynesian designation is Rapa-Nui, or Rapa the Great—in contradistinction to Oparo, or Rapa-Iti—Little Rapa—an island full of wonderful ancient fortifications, which lies about nineteen hundred miles to the westward.

The name Rapa in the Eastern Polynesian dialects denotes *quarrying*, or graving with a cutting tool of any kind (*cf.* Peruvian *lampa*, a spade or graving tool). In Rarotongan *Rapa i te tiki*—

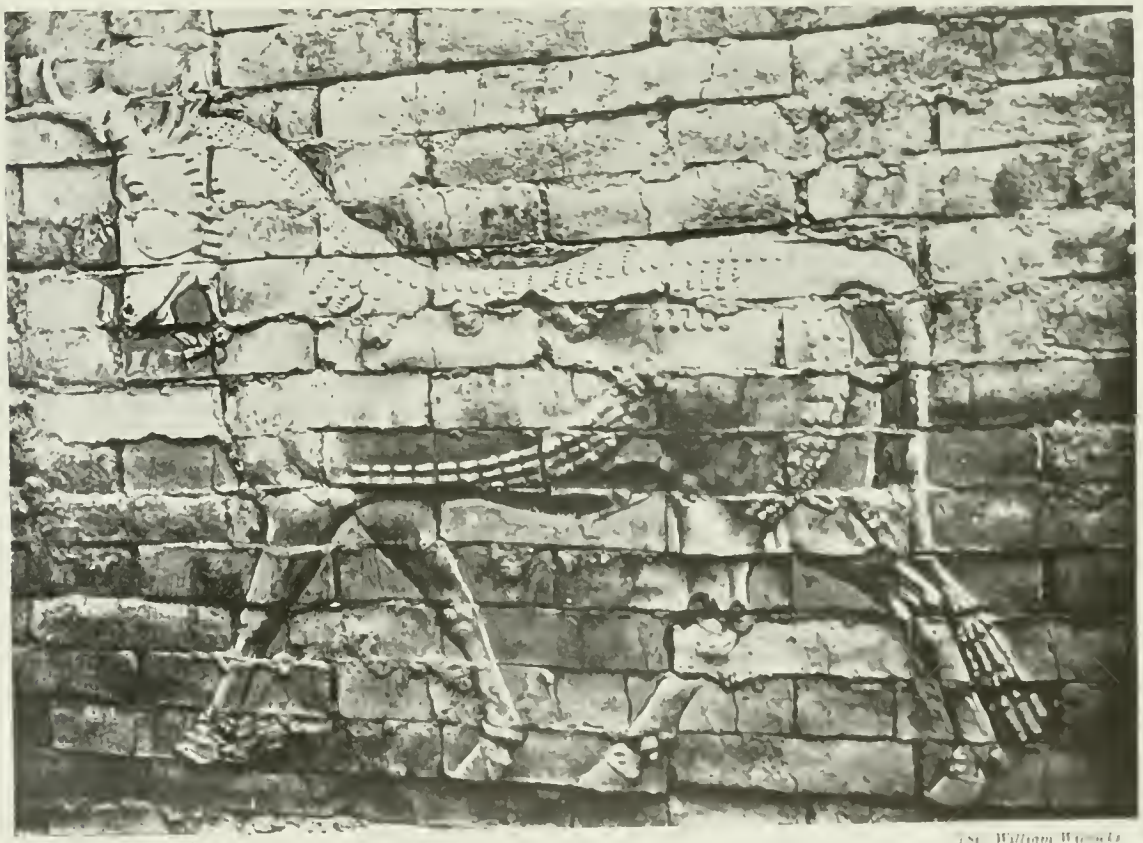

Photo by permission of] [Sir *William Ward*

A BAS-RELIEF ON THE GATE OF ISHTAR

The Gate of Ishtar is one of the most important discoveries made amongst the ruins of Babylon. It is the most magnificent fragment that remains of all Nebuchadnezzar's great constructions. The tiles of which the walls are composed are raised in relief and fitted together to form these splendid bas-reliefs. Furthermore, they are enamelled over by a process of which the secret is lost.

to hew out an image. It is a very appropriate name for this lone island, with its hundreds of monstrous rude trachyte statues, some standing erect, some lying prostrate in the quarries, some elaborately finished, some left still almost entirely in the rough, just as if a deadly epidemic or mighty cataclysm of nature, sudden and destructive as a lightning-flash, had fallen on the builders in the midst of their Titanic labours.

When those Polynesian Vikings, Hotu-Matua and Tuku-Io, with their war-fleets from Oparo, landed some six hundred years ago at Anakena Bay, they found the remnant of a giant race in possession, whom they styled the *Taringa Roroa*, or Long-Eared Folk, from a custom they had of artificially dilating the lower lobe of the ear to an enormous size.

Hotu-Matua and his Maori warriors these Cyclopes destroyed after a long and obstinate war. Some of the women were preserved, and seem to have handed down a certain amount of ancient legend and the interpretation of symbolical carvings and ancient hieroglyphs to a few old men amongst the scanty population now surviving. Peruvian slavers kidnapped most of the natives about 1860, and when the Maison Brander purchased Easter Island for a cattle-farm, in 1878, about half of the survivors were taken away to the Faaá district in Tahiti and to Niu-Maru, a village upon Mo'orea, where they are living even to this day.

Photo by permission of [*The Smithsonian Institute.*

THE STONE COLOSSI OF EASTER ISLAND.

These carvings are probably the earliest known specimens of sculpture; they are found in considerable numbers hewn out of the grey trachytic basalt of this solitary outpost of Eastern Polynesia.

The Chilian Government has now acquired the island, and there are only about three hundred natives left, mostly settled in the neighbourhood of Hanga-Roa.

The stone images, or *Moai*, number over five hundred and fifty, and vary in height from a prone colossus seventy feet long to a pigmy statuette only three feet from chin to base. Most of them are found at Rano Roraka and at Otu-Iti at the north-east end of the island. They are mostly trunks terminating at the hips and hewn out of grey trachytic basalt. Many of them stand

Photo by permission of [*The Smithsonian Institute.*

A STONE COLOSSUS OF EASTER ISLAND.

Mystery surrounds these mighty images, some of which are seventy feet high; while legend reports them to have been carved by a race of giants. The features are those of a race that has long since passed away, leaving behind only these effigies of creatures of monstrous, inhuman, godless mind.

on vast, massive seaward platforms from two hundred to three hundred feet long. Some of them are ornamented with crowns of red tufa-rock cut from the walls of the crater of *Te Rano Hau*—the Lake of the Crowns. Some of these unwieldy diadems measure over ten feet across. The visages of these images are square, stern and massive, with a sullen, proud, menacing and disdainful expression. The lips are thin and cruel, the upper one very short, the lower thrust up in a most curious manner. The ears have long pendant lobes; the faces are distinctly non-Polynesian.

These rude, grim statues belong to a far earlier age—the Prediluvian. Note the indescribably defiant and menacing air, the sneering Satanic pride, the vast, truculent, ruthless will in the faces of these colossi, each, like the Cyclops of the "Odyssey."—a creature of monstrous, inhuman, godless mind.

The Iron Pillar.—The particular interest of this plain Iron Pillar lies in the fact that it is the oldest example of wrought iron in existence. It is one of the marvels of ancient civilization, and presents to modern engineers an insoluble problem, how such a massive shaft was ever forged without the aid of the steam hammer.

The Iron Pillar records its own history in a Sanscrit inscription of six lines. For the translation of this we are indebted to the patient genius of the late Henry Prinsep, the Oriental scholar.

It is twenty-three feet in height and about sixteen inches in diameter. It has been deeply indented by a cannon-ball, which has slightly deflected the shaft. Mr. Prinsep assigned the inscription to the third or fourth century A.D.

The Pillar is called "The Arm of Fame of Rajah Dhava." He is said to have subdued a notable people—the Vahlikas, and with his own might obtained an undivided sovereignty over the earth.

There are several picturesque traditions connected with the Pillar. According to one, it was erected in its present position by Anang Pal, founder of the Tumar Dynasty. He drove its foot through the head of a huge and indignant serpent, pinning it fast, and thus prevented it wreaking its enmity on his house. As long as the serpent remained pegged down, the legend ran, so long the Dynasty would endure. And it did so, until an emperor of the line, moved by a dangerous curiosity, had the Pillar torn up to test the truth of the story. No serpent was found beneath it, but the foot of the Pillar was wet with blood. And the fall of his Dynasty followed within a short time.

The name of Anang Pal is inscribed on the shaft with the date 1052 A.D.

This Pillar stands beneath the walls of the Kutab Minar, on that plain outside Delhi which is strewn with the wreck and ruin of cities and civilizations. The Kutab Minar, or Tower of Victory, was raised by the Mohammedan conquerors of Delhi, who thrust out the Hindu rulers and left of their city no stone for memorial save only this iron shaft.

But time brought its revenges, and the oppressed people of the Pillar at length drove their Mohammedan conquerors from the land, and the Hindu Dynasty was once more on the throne.

END OF VOL. II.

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CORRIGENDA

On page *i.*, under the picture of *The Midnight Sun*, for "from about the middle of May to the end of July," read "for a period of the year which varies according to the position of the place."

The illustration on page 28 is that of the Gunta Raj, not Gomatesvara, a photograph of which will be found on page 208.

On page 84, in the first line of the description of the illustration, for "cast-iron," read "wrought-iron." A description of this pillar is given in the Appendix.

On page 146, for acknowledgment of lower photograph to "H. C. White Co.," read "Underwood and Underwood."

On page 313, on line 13, for "in memory of the mining country of England," etc., read "from some slight resemblance he discovered in the coast-line to that of South Wales."

On page 394, in the first line, underneath the title to the illustration, for "island" read "peninsula."

On page 402, the acknowledgment of the photograph of the sandstorm should be to "K. Rice-Oxley."

On page 522, for acknowledgment of photograph read "H. C. White Co."

On page 594, in the fourth line of the article on Burial in the Philippine Islands, for "Hindoo" read "Parsee."

On page 631, for acknowledgment of photograph, read from "stereo copyright by Underwood and Underwood."

On page 648, the illustration is of the crater of Irazu, Costa Rica.

On page 649, line 20, for "6,000 feet," read "over 19,000 feet."

On page 669 line 12, for "22,500 feet," read "21,520 feet."

On page 684, insert after title of illustration, "*Kloster Ingenbohl.*"

On page 714, for title of illustration read "The Walls of the Acropolis, Corinth."

For the lines beneath the illustration read:

> These walls are a splendid specimen of the typical structures to be found in Greece. Five periods of building can here be identified—that is to say, Pelasgic and Hellenic foundations, with Frankish, Venetian and Turkish additions.

On page 730, the lines beneath the picture of St. Paul's Cathedral should read: "A view of St. Paul's from the south-east side of the river."

On page 732, line 46, for "east" read "west."

On page 756, for acknowledgment of illustration, for "S. E. Whiting," read "Frank E. Whiting."

On page 833, with reference to the article on *Stonehenge*, it should be pointed out that many theories exist as regards the origin of these monoliths; particularly worthy of mention is that which assigns their construction to the primitive Picts.

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